DOCUMENT RESUME

ED 100 774 SO 008 063

AUTHOR	Ward, Ted W.; Herzog, William A., Jr.
TITLE	Effective Learning in Non-Formal Education. Program of Studies in Non-Formal Education. Team Reports.
INSTITUTION	Michigan State Univ., East Lansing. Inst. for International Studies in Education.
SPONS AGENCY	Agency for International Development (Dept. of State), Washington, D.C.
PUB DATE	74
NOTE	379p.; For related documents, see SO 008 058-064
EDRS PRICE	MF-$0.75 HC-$18.60 PLUS POSTAGE
DESCRIPTORS	Case Studies; Comparative Analysis; *Developing Nations; *Educational Alternatives; Educational Objectives; Educational Research; Evaluation; International Education; *Learning; Learning Readiness; *Learning Theories; Manpower Development; Models; *Nonformal Education; Universal Education
IDENTIFIERS	China

ABSTRACT

This document is part of a series dealing with nonformal education. Introductory information is included in document SO 008 058. The focus of this report is on the learning effectiveness of nonformal education. Chapter 1 compares effective learning in a formal and nonformal environment. Chapter 2 develops a systems model for designers of learning experiences within nonformal education. The third chapter specifically looks at one part of the systems model through examination of a prototype in Brazil. Chapter 4 emphasizes the relationship of evaluation to increased learning effectiveness. The fifth chapter illustrates the use of evaluation and the design of the media-mix for effective instructional delivery in a case study from Mexico. Chapter 6 reviews and relates research on the diffusion of innovation to the problem of learning effectiveness in nonformal education. The seventh chapter is a case study of the transformation and development of education in China since the revolution. Of special interest in this section is the reduction in the distinction between formal and nonformal education in China. The authors examine this trend and its relationship to the reward system of education and the reward systems of the society as a whole. (DE)

ED 100774

EFFECTIVE LEARNING
IN
NON-FORMAL EDUCATION

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Ted W. Ward and William A. Herzog, Jr.

Co-authors:

Norman Anderson
Wilfred Bellamy
John Dettoni
Raul Santoyo Gamio
Lois McKinney
Donald Miller
James Plueddemann
Pamela Quartermaine
Samuel Rowen
F. Donald Sawyer
Jacques Van Pelt

Michigan State University
East Lansing, Michigan
1974

SO 008 063

2/3

These Studies were produced
with the cooperation of the
Agency for International Development
Department of State, Washington, D. C.
1974

TABLE OF CONTENTS

Page

FOREWORD i

INTRODUCTORY REVIEW
Ted W. Ward 1

Chapter

I. EFFECTIVE LEARNING: LESSONS TO BE LEARNED FROM SCHOOLING
Ted Ward, F. Donald Sawyer, Lois McKinney, John Dettoni 14

II. PLANNING FOR EFFECTIVE LEARNING IN NON-FORMAL EDUCATION: A LEARNING SYSTEMS APPROACH
Ted Ward, Lois McKinney, John Dettoni, James Emery, Norman Anderson 65

III. RELATING INSTRUCTIONAL PROCEDURES TO LEARNER CHARACTERISTICS: AN EXPERIMENTAL ILLUSTRATION IN BRAZIL
Lois McKinney and Ted Ward 127

IV. INCREASING LEARNING EFFECTIVENESS THROUGH EVALUATION
Ted Ward and John Dettoni 198

V. EVALUATING, CHANGING AND INCREASING LEARNING EFFECTIVENESS
William A. Herzog, Jr. and Raul Santoyo Gamio . . . 289

VI. LEARNING EFFECTIVENESS AND THE COMMUNICATION OF INNOVATIONS
William A. Herzog, Jr. 305

VII. THE CASE OF THE DISAPPEARING DISTINCTION: FORMAL AND NON-FORMAL EDUCATION IN CHINA
F. Donald Sawyer and Ted Ward 324

FOREWORD

The Michigan State University Program of Studies in Non-formal Education, made possible by the Agency for International Development, has two primary objectives: to build a systematic knowledge base about non-formal education, and to apply knowledge through consultation, technical assistance, workshops, and the distribution of useful materials in developing areas of the world.

This series of Team Reports is directed at the first objective, knowledge building. The series consists of the final statements of nine teams of faculty members and research fellows, each working on a separate aspect of non-formal education for a substained period of time. The reports range widely over non-formal education. They deal with its history, its categories and strategies, economics, and learning. Other reports made comparisons among country programs, survey case studies, examine the feasibility of designing non-formal education models, look at administrative alternatives and draw plans for participant training in non-formal education.

The teams were cross-disciplinary in composition, representing such areas as economics, labor and industrial relations, political science, public administration, agricultural economics, sociology and education. Together, members of the teams produced nearly one hundred working papers, many of which were shared and debated in three series of semi-weekly seminars for all project participants. The working papers, copies of which are available upon request, provide the basic ideas for the reports in this series.

In the interest of the freest possible exploration, each team was encouraged to range widely over its domain and to develop its own set of conclusions and recommendations. Coordination was achieved through the common seminars and the exchange of data and experience. A summary volume, pulling together and synthesizing the main thrusts of all the team reports in this series, is being prepared under the editorship of Marvin Grandstaff. Like the working papers, the summary volume will be available for distribution.

In line with our first objective (knowledge building) the papers in this series are conceptual in nature. In the pursuit of knowledge, however, we have tried to keep one question steadily before us: what assistance does this knowledge provide to those whose primary concern is with action--the planning and implementing of non-formal education at the level of practice? That question isn't easily answered. At best our knowledge is partial and it needs the experience dimension to make it more complete. For thought and action are not antithetical; they are necessary complements. One of our hopes is that this series of team reports may help to stimulate further dialogue between those who approach the subject of non-formal education from a conceptual point of view and those whose questions and problems arise in the exigencies of practice.

What is the role of non-formal education in future development planning? As these reports suggest, it is probably great, and will be even greater through future time. The limitations of formal schooling are coming to be better understood. As the Faure report concludes, the schools "will be less and less in a position to claim the education functions in society as its special perogative. All sectors--public administration, industry, communcations, transportation--must take part in promoting education. Local and national communities are in themselves eminently education institutions".

The non-formal education component of most societies is strong, indeed frequently vigorous, and fully capable of further development and use. It is estimated that roughly half of the present educational effort in the developing countries is in the non-formal sector. Collectively, these programs exhibit characteristics indispensible to development. For example, they tend to arise in response to immediate needs; they are usually related to action and use; they tend to be short term rather than long; they have a variety of sponsors, both public and private; and they tend to be responsive to local community requirements. More importantly non-formal education shows strong

BEST COPY AVAILABLE

potential for getting at the human condition of those most likely to be excluded from the formal schools--the poor, the isolated, the rural, the illiterate, the unemployed and the under-employed--for being carried on in the context of limited resources, and for being efficient in terms of time and cost.

Clearly, attention given to designing new strategies for the development of this old and promising resource is worthwhile. Through this series we seek to join hands with others who are attending to the development of non-formal education.

Cole S. Brembeck, Director
Institute for International Studies
College of Education
Michigan State University
East Lansing, Michigan
1974

INTRODUCTORY REVIEW

Ted W. Ward

From their many viewpoints, educational planners, evaluators, curriculum specialists, communication scientists and other researchers are examining non-formal education. Non-formal education seems to be an emerging phenomenon around the world; it is more correctly described as an emerging awareness. For some, "non-formal education" refers to a search for ways to extend the influence of education through lower-cost modes of delivery. For others, it is a concern for fundamentally different goals and approaches to effective learning.

The particular interest of the authors is "learning effectiveness" within non-formal education. Learning effectiveness is an arbitrary term intended to indicate the problems associated with the strengths and weaknesses of a program at the learner's level--the instructional effects or the learning experiences within a non-formal learning environment. Questions dealing with the impact or worth of learning experiences are raised: is there any difference in the characteristics of a good learning experience in a non-formal environment and in a formal environment? Is there anything about the non-formal environment that makes for assets or liabilities in learning? Is there anything that should be or can be done differently in a non-formal learning environment?

The study of learning effectiveness in non-formal education does not lend itself to the ordinary ways and means of review. First, the literature in the field of learning research rarely refers to "learning effectiveness," as such. Further, since there are no strong traditions of research that differentiate learning in formal and non-formal environments, it is necessary to relate ideas inferentially from various forms of scholarly literature and to collate diverse knowledge and varied experiences, attempting to build a synthesis out of what can be said about learning in different environments.

Because research in human learning has been conducted largely by scientists within the institutions of formal education, the concepts, findings, and interpretations of learning research are extensively bound up in assumptions characteristic of formal education. Most studies that contribute to learning theory are designed by scholars who, themselves, are indebted to formal education; their studies typically are conducted by advanced collegians and graduate students; and college sophomores and juniors are ordinarily recruited as experimental subjects. These practices of the learning researchers may be justified, but they demand continuous caution in the generalization of findings to all populations. Further, the standard concepts of learning that underlie the experimental research assume instructional models much more like formal education than non-formal education. For example, research on the learning of nonsense syllables and other arbitrary learning tasks is representative of learning situations in which the learner has little or no interest and for which he must be motivated extrinsically.

Considering these problems within the traditions of research in human learning, we must at least hold open the possibility that what is known about human learning is more specific to the sort of learning that characterizes formal education, and that there may be, in fact, some differences in the aspects of learning that are involved in non-formal education.

Though we begin with the rather fuzzy term "learning effectiveness," the work becomes somewhat more precise if we take "learning effectiveness" to mean consequential instructional communication. This focus allows us to work in a communication framework in addition to the more classical teaching/learning framework. Thus we think in terms of diffusion, dissemination, behavior change, and adoption of innovation as evidences of learning effectiveness. This focus, as a matter of fact, fits rather well within the framework of the new emphases in psychology of learning which speak of learning as changed behavior. Changed behavior is inherently innovative for the situation or the person; thus the pragmatic criterion of effectiveness is adoption. Working back from this end, we seek out some of the factors that are controllable variables within a learning environment. These are identified so that they can be made servants of the goals of educational effort.

We have attempted to develop both a theoretical and a practical view of non-formal education. We assume that what is needed is a practical, pragmatic view. On the basis of our findings on the state of the art and the state of the literature--what we know about non-formal education--there are certain things that can be recommended and certain things that should be discouraged. There are some assets and some liabilities in the non-formal educational experience and we point out what they mean and what they suggest to us. We identify primarily with the more practical side of the issues, but hopefully our theoretical work makes it possible for the reader to see the basis of the recommendations and use relevant data to derive his own conclusions about the validity of those recommendations.

People with many different interests and various values are asking questions about non-formal education. For some, non-formal education is primarily a way to extend the influence of the basic schooling systems. For persons holding this position, there is much interest in extension and field-based training, in-service and continuing education, as well as uses of mass-media for extending the influence and value of the structures of formal education. These concerns center on matters of alternative or expanded delivery systems for the sorts of education that schools have already been providing. Thus the interest in non-formal education is seen to be promising because it may represent a new emphasis on the value of education for wider sets of people.

For others, interest in non-formal education is something else: a demand for alternatives to formal schooling in order to do something worthwhile for those whose educational needs are not now being met. This position represents much more than the awareness of the importance of education; it arises from a conviction that new ways are demanded so as to meet the needs of those who are now unable to bend themselves into the schooling establishment--including the crucial problem of out-of-school youth. From this position, non-formal education is far more than new delivery systems; it is the restructuring of goals and even the underlying assumptions about what constitutes worthwhile content in education.

We are especially anxious about the premature building of large-scale policies and large-scale investments and programs of non-formal education. Large categorical loans, for example, could be potentially destructive of certain valuable forces within non-formal education. Benign neglect is bad enough, but the establishment of formal policies concerning the sorts of non-formal education that do and don't fit "national policy" will surely have the effect of discouraging or even purging some of the vital programs that now exist. As large-scale funding of non-formal education is undertaken it should be accompanied by caution and safeguards. Non-formal education should not be "standardized" nor should it be insulated from the voice of its clients. What is needed is communication, not control.

Structure of the Monograph

The effectiveness problem is seen as a set of questions that can be looked at from several vantage points; thus the chapters represent an attempt to place ourselves at different vantage points to look into non-formal education. In order that our work not converge into a homogeneous mass, we have attempted to build separate chapters from these several vantage points. For example, the first chapter is concerned with the defining of learning effectiveness in special reference to non-formal learning environments and what they suggest about phenomena and characteristics of effective learning. We explore the question: "Compared with the formal learning environment, is effective learning different in a non-formal environment?" And the answer we find is "yes and no." Yes, there are certain attributes relating to effectiveness that are more common to one mode than to the other. For example, typically in a non-formal environment--intermediate rewards are not utilized or are much less important than they are in formal education. Symbolic rewards, certificates, degrees and so forth (the pay-offs that you can't eat but that you are taught to hold in high regard in formal education), are virtually inconsequential in the most exciting programs of non-formal education. Non-formal education tends to be oriented to a reward system that is closer to the world of work and to the improvement of the quality of everyday life. Thus it may be easier to induce motivation in the formal environment, but easier to capitalize on existing motivation in the non-formal environment.

The second chapter represents the development of a systems model for designers of learning experiences within non-formal education. It is not a systems model for national planning or for resource allocations. Instead it assumes that if an organization is intent on using non-formal education, and that if someone has been given responsibility for designing instruction or approaches to the learning problem, a systems model such as this can alert him to the variables that an instructional plan can accommodate. As a planner and designer of instruction takes account of the interrelationships among these variables, he can assess which factors are most important in his own situation in order to make a good plan--a good design for effective learning. Those who have discovered the usefulness of "systems thinking" commonly believe that a preliminary model is better than no model at all. To such people this paper will be encouraging.

The third chapter takes a specific look at one part of the systems model through examination of an experimental example. Learner characteristics are seen as important variables in effective learning. The study of ethnological factors that characterize learners can lead to certain systematic transformations or adaptations of instructional materials and instructional approaches from one culture (or one setting within a culture) to another. Using an experimental procedure, we studied the question of transforming an instructional material to increase learning effectiveness. What do you need to know about people in order to know what needs to be changed in the instructional approach? Programmed instruction in four more-or-less culturally attuned variations was used in teaching a non-formal nutrition unit to some of the recently urbanized fringe populations in Sao Paulo, Brazil. Variants of the instructional approach were developed on two continua: group/individual mode, and discovery/expository style. The results of this experiment show the promising benefits of group experiences in discovery-learning, at least for learning effectiveness among this sort of population.

The fourth chapter emphasizes the relationship of evaluation (especially formative evaluation) to the increasing of learning effectiveness. The chapter consists of two parts: first, a compilation of the particular concepts and procedures in contemporary educational evaluation that seem most to relate to problems in non-formal education. This review is followed by an illustrative case study describing the development and use of a comprehensive plan for formative evaluation within a large, non-formal education program the FASE of Brazil. The paper is a sort of how-to-do-it manual, illustrated by an application of the principles and procedures.

A case study from Mexico is the basis of the fifth chapter. Again viewing the non-formal education situation as an exercise in effective instructional communication, this chapter illustrates both the use of evaluation and the design of the media-mix for effective instructional delivery.

Sixth, a chapter has been written to review and relate research on the diffusion of innovations to the problem of learning effectiveness in non-formal education. The literature reviewed has been useful, as a whole, in re-thinking the procedures whereby changes in methodology and forms of instructional materials might best be brought about in formal education. It is partly in reference to the problem of alteration and improvement of educational services through new uses of non-formal education that this literature has value for the series. But even further, the fact that non-formal education is typically concerned with innovation and change within a society--or at least within the life-experience of distinct target audiences--suggests that the whole of non-formal education might best be seen as a set of non-schooling processes through which innovations are being diffused. In this sense, the monograph views learning effectiveness as a matter of adoption of innovations. Thus key concepts from the literature of communication theory can be brought to bear.

The seventh chapter is a case study of the transformation and development of education in China since the revolution. In just over a quarter-century the world's largest nation has mobilized human resources in a way and in such a scale as to constitute significant precedents. One of the intriguing characteristics of education in China today is the reduction of the distinction between formal and non-formal education. The authors examine this trend and give special attention to the relationship between the reward system of education and the reward systems of the society as a whole.

The final chapter is an illustrative collection of brief case studies written by people who have dedicated themselves to careers in non-formal education. Each of the authors represented in this chapter has distinguished himself as a knowledgeable "outsider" (North American or European) working to make his own role unnecessary by emphasizing the development of human resources and leadership from among the indigenous populations for control and maintenance of non-formal education programs.

This monograph does not claim to represent the whole of non-formal education. The vast scope and complexity of non-formal education makes such a claim unreasonable for even the most burdensome tome. But we do claim, collectively, an amalgam of awareness, experience and insight that can serve the seeker as a responsible basis from which to gain a better perspective on the problems of effective learning and thus to become more able to design and operate effective programs of non-formal education.

A "Manual of Advisement in Non-Formal Education" has been suggested and requested by certain country missions of USAID. Actually that "Manual of Advisement" is already in some of our minds and will probably be forthcoming. Possibly some of the present writings will find their way into such a manual.

Preview of the Findings

In the development of these studies certain assumptions have become even more firmly embedded in our thinking:

1. More learning of certain sorts can reduce human need,
2. More effective learning can be achieved through improved instructional communication, and
3. To be effective, learning must make significant differences in people's lives.

We have made many observations, in the literature and through direct experience in the field. Some of the more persistent observations, developed in various ways by the authors in this series are the following:

1. Two major functions, to some extent based on contrasting and competing needs, have led to the various emphases on non-formal education:
    a. Seeking for expanded and alternative delivery systems (1) to lower costs of education, and (2) to improve access to education;
    b. Revising the nature of educational content and its relation to large-scale social needs.
2. There is a great range of qualitative differences among activities that fall into the general category "non-formal education," some are effective, some are ineffective. Just because an educational experience is non-formal is no promise that it will be effective.
3. An appropriate awareness of teaching and learning is arising. Involved in this "new pedagogy" are the following factors, some of which are becoming more clearly a matter of concern for those studying and planning non-formal education:
    a. Recognition that planning of instructional systems is a promising alternative to unplanned pedagogy (unplanned pedagogy in non-formal education is apt to reflect little more than the ways and means of formal education);

b. Recognition of the need to use slightly-trained instructional manpower;

c. Recognition of values of various "mixes" of instructional mediation;

d. Recognition that "motivating people" must give way to learning based on motives that reflect functional rewards in the society;

e. Recognition that knowing the learners and accommodating their characteristics is the basis of increased effectiveness; and

f. Awakening of self-awareness--explainable in terms of Piaget's higher stages of cognitive development (abstract processes and formal processes)--is the most promising single change that characterizes the emerging new instructional styles, e.g., Freire's "concientization."

Studying effective learning as it relates to non-formal education is a series of confrontations with various dilemmas. Some of the more troublesome dilemmas follow:

1. Learning research and the most basic literature does not explicitly distinguish between learning in formal and non-formal learning environments. The distinction between formal and non-formal is assumed to be more a matter of the context of learning than of the kind or quality of learning. However, since formal education is both the source of research concepts and the locus of most experimental studies, it is probable that learning theory relates more adequately to formal education than to non-formal education. It is reasonable, nonetheless, to assume that learning is enhanced in essentially the same ways in formal and non-formal education. To some extent, these enhancements of learning are more "natural" in non-formal education; but we have seen that even in non-formal education the key factors that enhance learning may be missing!

2. If the interest in non-formal education is somewhat cynical, it can be said that ministries of education are rising to the bait:

a. They are establishing councils for liaison with other ministries;

b. They are effecting legislation or bureaucratic rules to gain control of non-formal education; and

c. They are sponsoring retraining for non-school educational personnel.

Some of these efforts are necessary (or at least assumed to be the necessary bureaucratic steps to involvement of government in non-formal education). But some of the results are not clearly advantageous:

a. The ministry of education may tend to discourage variation; it may become more bureaucratic and be seen as a threat to other agencies already engaged in non-formal education.

b. A ministry of education tends to structure, absorb, and control.

c. A ministry of education tends to maintain, justify and further entrench the existing systems of schooling, no matter how firmly avowed is the intent to be open to change.

There is a real danger in trapping large sectors of humanity in a limited sort of education. It is possible that schooling as literacy and schooling as formal cognitive processes in abstract reasoning are necessary to unlock the higher potentialities in learners. The evidence on this issue is not conclusive. The needs of many marginal and growth-sector populations include the need for status provided by the formal education structures. This is reflected in the ceremonial and symbolic credentialing components of the culture. Discarding these structures requires radical surgery and endangers the stability of the society. Dangers in pragmatic solutions for short-term problems are serious; the long-range potentialities for use of the learnings must be considered. In these writings, the difference between documenting and speculating--describing and prescribing--is a continuing issue of discipline. We cannot claim to have made a thoroughly dispassionate review of the situation; the reader is thus warned to protect himself from the well-intentioned biases of the authors.

After an immersion of three years in the study of non-formal education, its problems and promises, we are prepared to cite a number of general conclusions and to offer a series of recommendations:

1. The most important factor in designing re-vitalized education is the emphasis on the characteristics of target learners in relation to the reward systems within which they live.
2. Not all non-formal education is equally effective. Factors that seem to make the difference and to accompany quality (in terms of effective learning) are reflected in the following recommendations:
    a. Every program of non-formal education should include an evaluation component.

    b. Comparative studies should be done across programs of non-formal education; programs that knowledgeably draw from precedents and which are alert to alternative ways of doing things generally are stronger.

    c. Planning and replanning should allow for recycling on the basis of formative evaluation; unchangeable programs tend to stagnate and degenerate, no matter how promising at first.
3. Alternative delivery systems are more attractive to developing nations than are revisions of the content and concepts of education.
    a. If alternative delivery systems are to be significant doors to progress, planners must be helped to see the larger issues implicit in the content of education.

    b. Every program of non-formal education should include a content evaluation.
4. The contemporary emphasis on non-formal education is not inherently a good thing.
    a. Communicative awareness and sharing, not coordination and control should be the goal of any overseeing ministry.

    b. A ministry of education should not see itself as the sole agency of non-formal education.

    c. Experimental programs should be encouraged, especially those that deal with alternative content and structure.

The "De-Schooling" Undercurrent

One cannot move very far into the study of learning effectiveness in non-formal education before encountering the question, "What's wrong with the schools?" If schools were as concerned about effective learning as they are with "covering the material," as concerned with helping and as involved with fundamental issues of society as they are with the running of "orderly" institutions, the current debate over the validity of schooling would be easier to resolve (indeed it might not have become an issue!). To these problems must be added, in fairness, the matter of the size of the establishment: it is important to remember that schools, in the most "advanced" countries, are expected to cope with vast numbers of people and to do so for twelve and more years for each person. And in these twelve years the success of the system is measured in the same way for the whole mass. The management problems associated with supporting such a huge operation virtually rule out any serious concern for learning effectiveness.

If there are lessons here for non-formal education, they might be drawn from the converse of the schooling dilemma. Rather than creating a single complex establishment attempting to serve all the needs of all the people, non-formal education would be better advised to remain a loose conglomerate of many kinds of resources, in many different ways providing an array of educational services. Rather than attempting to drag everyone into and through some arbitrary portion of the whole system, non-formal education would attempt to make its resources highly visible and easily accessible. Across the path of people's own motivations non-formal education can place ways and means that they can recognize, accept, and relate to in order to help themselves.

With reference to content, non-formal education should be concerned more with what people can see a need for than for what academic traditions have ordained as "fundamental." In the matter of institutional structure, overheads of all sorts should be kept low--make minimal physical plant investments (use existing buildings, on the job, in the plant, in the neighborhoods and at the roadside); make few administrative hierarchies, keep the ratio of delivery agents to administrators very high; keep the training of technicians from becoming an over-bearing superstructure; and build programs at a local level rather than at a bureaucratic "headquarters" in the capitol.

Above all, the classical mistakes, excesses and faulty assumptions that are so readily criticized in formal education should be recognized and avoided. Thus we encourage planners of educational experiences for non-formal education to be careful readers of the growing literature on de-schooling. That literature is not extensively treated in these pages, but our findings point to some of the same issues.

CHAPTER I

EFFECTIVE LEARNING: LESSONS TO BE LEARNED FROM SCHOOLING

Ted W. Ward
F. Donald Sawyer
Lois McKinney
John Dettoni

> The school teachers . . .
> If an inspector happened to pass by, they could put up a better show than we could. The inspector does not venture outside the syllabus. Although you know perfectly well, and so does he, that that kind of French is useless. And for whom are you doing it? You do it for the . . . Minister of Education. That is the most upsetting aspect of your school: it lives as an end in itself.*

Worldwide, formal schooling is writhing in an upheaval. In America--exemplary of a thoroughly schooled society--critics ranging the full spectrum of educational philosophies, are finding eager audiences for critical and cynical writings. Parents, students and educators seem ready to believe the worst. Study after study, volume after volume describe in sanguine detail about the alleged bankruptcy of the educational enterprise envied the world over. In a prosperous and industrialized society such as the United States, continued investment in a disfunctional mode of education is simply an unfortunate and regrettable misuse of human and material resources; but in a less developed nation, it is a disastrous and tragic policy leading to national frustration.

---

*The Schoolboys of Barbiana, Letter to a Teacher, trans. by Nora Rossi and Tom Cole (New York: Random House, 1970), p. 17.

The desire of many less developed countries to achieve the same level of economic development, evidenced by an attendent cornucopia of material wealth as possessed by the United States, leads them to emulate their richer, much envied and idealized neighbor in the key area they feel is within their grasp--education. The situation is analogous to the pathetic efforts of a Pacific Cargo Cult hopefully constructing non-functional replicas of airliners and clearing landing strips in the jungle to welcome wealth-laden planes from the skies, thus expecting to enrich their impoverished islands. Laborious and elaborate preparations over, the people wait vainly for the arrival of their dreams. So it is with many of the development hopes invested in schooling.

Problems of Schooling

As Ivan Illich points out, for the LDC's (less developed countries) to accept the "schooling hoax is to purchase a ticket for the backseat in a bus headed nowhere."

> More and more, men begin to believe that in the schooling game, the loser gets only what he deserves. The belief in the ability of schools to label people correctly is already so strong that people accept their vocational and marital fate with a gambler's resignation. In cities this faith in school-slotting is on the way to sprouting a more creditable meritocracy--a state of mind in which each citizen believes that he deserves the place assigned to him by school. A perfect meritocracy, in which there would be no excuses, is not yet upon us, and I believe it can be avoided. It must be avoided, since a perfect meritocracy would not only be hellish, it would be hell.
>
> Educators appeal to the gambling instinct of the entire population when they raise money for schools. They advertise the jackpot without mentioning the odds. And those odds are high indeed for someone who is born brown, poor, or in the pampa. In Latin America, no country is prouder of its legally obligatory admission-free school system than Argentina. Yet only one Argentinean of five thousand born into the lower half of the population gets as far as the university.
>
> What is only a wheel of fortune for an individual is a spinning wheel of irreversible underdevelopment for a nation. The high cost of schooling turns education into a scarce

> resource, as poor countries accept that a certain number of years in school makes an educated man. More money gets spent on fewer people. In poor countries, the school pyramid of the rich countries takes on the shape of an obelisk, or a rocket. School inevitably gives individuals who attend it and then drop out, as well as those who don't make it at all, a rationale for their own inferiority. But for poor nations, obligatory schooling is a monument to self-inflicted inferiority. To buy the schooling hoax is to purchase a ticket for the back seat in a bus headed nowhere.
>
> Schooling encrusts the poorest nations at the bottom of the educational bucket. The school systems of Latin America are fossilized deposits of a dream begun a century ago. The school pyramid is a-building from top to bottom throughout Latin America. All countries spend more than 20 percent of their national budgets and nearly 5 percent of their gross national product on its construction. Teachers constitute the largest profession, and their children are frequently the largest group of students in the upper grades. Fundamental education is either redefined as the foundation for schooling and therefore placed beyond the reach of the unschooled and the early dropout, or is defined as a remedy for the unschooled, which will only frustrate him into accepting inferiority. Even the poorest countries continue to spend disproportionate sums on graduate schools--gardens that ornament the penthouses of skyscrapers built in a slum.[1]

If the primary tragedy occurs in the attempts of poorer countries to imitate a disfunctional system, then those disfunctions can be most readily explored in the mother model itself. One Canadian educator has identified eight ills of public schooling in North America: (1) the emphasis on competition; (2) the misuse of educational resources; (3) the misuse of time due to a general obsession with sequential curriculum grades, tests, registers and administrative details; (4) the general use of coercion, manipulation and discipline to fit individual students into a pattern that will reflect the teachers', not the students' attitudes toward life, education and learning; (5) the neglect of schools in the area of social-emotional growth; (6) the absurdity of the teacher-versus-student relationship; (7) the loss of real, relevant, meaningful and rewarding experiences in school; and (8) the belief that the classroom and school is the only learning environment available to students and teachers.

BEST COPY AVAILABLE

These issues in a multitude of variations have been chronicled in Silberman's Carnegie Commission report[2] and in many other recent volumes and articles. Such problems are not restricted, however, to the North American scene. In the context of lesser developed countries these "illnesses" become national cancers draining a nation's strength and resources. In the course of this paper, the failures of formal schooling in the American milieu will be examined as they manifest themselves in the third world. In so doing, it is hoped that a theoretical base will be developed which will suggest some directions and principles useful in the creation of an effective, non-formal educational system to meet the national needs of countries now being failed by rather than being served by formal education.

In a country with little wealth to begin with, the commitment of nearly half of the national budget to an educational system that invests half the educational expenditure on one percent of the school-age population, as is the case in Bolivia, is of dubious wisdom. To further underscore the imbalanced use of educational funds, Illich claims that each of Bolivia's university students receives 1,000 times the average citizen's share of public expenditures.[3] Yet the competitive educational model that gives rise to this meritocracy justifies (in the minds of the "failures," that vast majority of participants in the schooling game, as well as in the minds of the succeeders the legitimacy of these grotesque inequalities.

The losers are the people; especially the childern of the lower classes.

> The typical working class family . . . confers a relative disadvantage on its children with respect to their language and cognitive development, which makes it more difficult for them to succeed in the primary grades of school, where the teacher uses an elaborate language which is much like that which the middle-class child has learned in his home.[4]

The passive acceptance of lowly status by those excluded (because of social and environmental factors) from the credentialing process via the schools, however, is only slightly less tragic than the elevating to positions of power those meritocrats who have been concerned less with getting along with their fellow students than with getting ahead of them. The lack of concern or understanding demonstrated by the leaders and economic elite persons of many LDC's for their less fortunate countrymen can be at least in part traced to the struggle for credentials and "superiority" fostered by competitive schooling; and this struggle does not lead to increasing the concern for what is being learned or its relevancy to national needs and conditions. Motivation for learning in schooling is commonly derived from a fear of academic failure and the consequent entrapment by poverty and powerlessness.

While schooling can and does create and reinforce social stratification, it has proven remarkably ineffective as a means of closing these gaps. Jencks concludes that schools, regardless of their quality, the innovativeness of their programs, or the attitudes of their teachers, are largely incapable of going very far in reducing social and economic inequality.

> These findings imply that school reform is never likely to have any significant effect on the degree of inequality among adults. This suggests that the prevalent "factory" model, in which schools are seen as places that "produce" alumni, probably ought to be abandoned. It is true that schools have "inputs" and "outputs," and that one of their nominal purposes is to take human "raw material" (i.e., children) and convert it into something more "useful" (i.e., employable adults). Our research suggests, however, that the character of a school's output depends largely on a single input, the characteristics of the entering children. Everything else--the school budget, its policies, the characteristics of the teachers--is either secondary or completely irrelevant, at least so long as the range of variation among schools is as narrow as it seems to be in America.[5]

To the extent that Jencks' data can be generalized to situations outside the United States, it would appear that LDC's cannot look to the formal educational system to provide greater equality of material and power distribution or to draw a larger proportion of their population into the dynamic process of nation-building.

Kitchen (1968) in a study of the relationships between socioeconomic factors and educational output in Newfoundland, the area in Canada most similar to the conditions found in most LDC's, found that

BEST COPY AVAILABLE

the "educational inputs" (teacher salaries and teacher experience) had less relationship to "educational outputs" (retention, retardation and completion) than did many of the socio-economic variables examined. For example in the matter of retention, the length of time a student remained in school was more significantly related to six socio-economic factors on one measure and eight on another than to any of the educational input variables. The four factors most prominently related to retention (and this general pattern held remarkably true for the other measures as well) in rank order were (1) percentage of community population illiterate, (2) percentage of community population functionally illiterate or illiterate, (3) percentage living in urban centers, and (4) percentage living in rural non-farm communities.

Kitchen concludes,

> It follows from the evidence that attempts at increasing educational output must go beyond the raising of teachers' salaries . . . . The more basic problems of chronic non-employment, adult illiteracy, fatalism, and large families must be tackled, and ways to counteract their effects upon each succeeding generation.[6]

Viewing buildings and resources together, it seems apparent that the elaborate structures and facilities of American education are out of reach of most less developed countries. But less clear is whether this is a detriment or an advantage. The benefit/cost ratio of American education is so much under attack that questionable schemes such as performance-based contracts, have been desperately latched onto by anxious school boards across the country. Obtaining little in return for enormous expenditures has turned the public into an angry camp; millage requests are being voted down time after time. Schools operating in old houses, basements and churches--many part-time--threaten to match and surpass the public schools in the area of skill development. As a result of the schools' tendency to grow even larger and to hide their operations in forbidding structures often set apart physically as well as psychologically from the community they are supposed to serve, the education that takes place there has become so detached from local needs and conditions and from reality in general that, as Edward Wynne points out, the product is largely unintegratable and lost to society, at least as a critical, capable, aware, mature participant.

> The families and schools do not intend to prevent these children (particularly upper-middle class children) from maturing, but they naturally structure and focus the development of the young. The process they apply heavily emphasizes in-school and book learning, and systematically shields the young from diversified life experiences. This handicaps their transition from youth to adulthood. The children do essentially what their parents and their schools want--and end up inadequately matured.[7]

Not only do the fantastic expenditures for educational hardware in the United States often appear to impede emotional and social maturity, but the necessity or even effectiveness of such expensive instructional tools seems questionable as well. Paulo Freire, the expatriate Brazilian educator who has developed an influential approach to literacy and basic community development for Latin American adults, states that the materials for his program, a slide projector and set of slides, costs between $6.00 and $7.00.[8] With these materials 25 people are taught basic literacy in about two months. As in most cases of effective rural or extension education, Freire depends not on elaborate, carpeted media centers with individual projectors for each student, or on gadgeted reading labs, but on identifying the needs of his clients and then using their concerns and the resources of the community to provide learning for which the target learners see a need. It is not Freire's methods, in the mechanistic sense, that make his contribution significant, but rather his total commitment to the view that what the learner values is the important basis for effective learning.

The misuse of time in American schools is perhaps the most striking illness of all. As education critic Jonathan Kozal states:

> Twelve years of lock step labor in the field of math or language arts are manifestly wasteful of a child's learning energies and learning hours . . . . No child who is not brain-injured or otherwise impeded in his powers of comprehension needs six years to learn to write ten sentences with reasonable cogency and power.[9]

And while Freire is a little more modest and allows himself forty days, the Chinese now claim to be able to teach basic literacy through records and instruction in twenty hours. Reimer cites John Gardner, former U.S. Secretary of Health, Education, and Welfare as stating that everything now taught in twelve years of schooling could be learned in two, or, with a little effort even one.[10] The time spent in activities unrelated to educational activities in most schools far exceeds that expended in actual teaching. The custodial function of schools becomes predominant and time is allocated accordingly--the teacher spends most of his working hours in bureaucratic tasks and maintaining order over his bored, unruly charges. In fact, a study conducted in Puerto Rico by Anthony Lauria indicated that less than 20 percent of the teacher's time was available for instruction; the remainder was spent on "behavior control and administrative routine."[11]

It quickly becomes clear to even the most casual observer that to be effective, education does not require the tremendous number of hours devoted to largely meaningless labor which is required in so much of American schooling.

Literacy

Besides the general shortcomings and high cost of formalized schooling, the possibility of implementing a system of formal education in most LDC's is highly doubtful for a number of reasons relating to the particular conditions of the developing nations. For example, there are 110 million more illiterate adults in the world today than in 1951,[12] and almost all of this increase has occurred in third world countries. In many countries the population is increasing twice as fast as the literacy rate. Relying on formal schooling to close this gap has proven unsuccessful; instead of narrowing, the gap has widened steadily. Formal education has proven incapable of meeting the demands made upon it by population increases even in the area to which it claims to address itself the most directly--literacy.

For many people, the threshold of opportunity for learning is literacy. Formal education is structured to exclude those who cannot read and write. Thus formal education's first task is assumed to be development of literacy skills. Aptitude for reading, especially, is the predetermination of a child's educational opportunity; learning quickly to read well is the royal road to educational advancement and to the employment opportunities for which formal education is the gate-key. Many intelligent people--lacking in motivation for formal schooling during childhood--are condemned to relatively restricted opportunity and ultimate productivity. This is especially serious in societies aspiring after the degree-credentialing economic-status system of the colonial tradition.[13]

Caspar Weinberger, the U.S. Secretary of Health, Education and Welfare, in announcing the $4.4 million in 1973 "Right to Read" program grants stated that "Almost 19 million adult Americans are totally or functionally illiterate and another seven million elementary and secondary school students have severe reading problems."[14] One must wonder about one part of the stated objectives of the "Right to Read" program: to "eliminate" adult illiteracy. Considering the size of the problem the idea of "elimination" sounds painfully similar to those grandiose claims which so often have led the world toward disappointment: "universal education," "functional literacy for all" and "free access to schools," to name a few. Even in a "developed" nation, formal education had best include alternative modes of learning experience; clearly, if two Americans in each thirty are functionally illiterate there are many more for whom the reading skill is problematic, at best.

From our snug and smug posture in the "have" nations, it is so easy to see non-formal education as a concern of the "have-not" nations--and to extend this faulty view to the matter of literacy. People are not more intelligent after they learn to read: illiteracy does not mean unreachable, stupid primitives. In certain societies, in fact, the skills of aural learning are more highly developed than outsiders can imagine. We should learn to "connect" with these existing learning skills before we push the new learning skills that literacy demands.

The persistent problem is that people simply do not want to waste time reading; by this we describe the majority of the people in the world, not some small fragment. When a whole society is organized around aural communication, print media can seem to be so unimportant! No matter how fond of reading some of us may be, communicating with people is a matter of reaching out to where they are and accepting them the way they are. That means, for non-formal education, resisting the temptation to make literacy a requirement for practical learning and human development.

As people who have been wrestling with the matter of literacy and its relationship to effective learning, we urge that the issue be kept open; we are sounding the call for rethinking the place of literacy in human development. Pragmatically, the problem is that so few non-literate people see the value of learning to read and write. The mysterious processes of coding and decoding marks on paper are remote from the pressing problems of daily survival, and even more irrelevant for the typical peasant who has not even grasped the vision of participating in the determination of his own destiny. At a deeper level, the issue is to decide at what point and for what purposes literacy will be seen as important by the learners, and to use non-literacy-based procedures up until that point.

Unless LDC's can break out of the "literacy first" perception of education, they are dooming huge percenteges, and often increasing numbers, of their citizens to continued ignorance, powerlessness and poverty. As a recent report on education in Ethiopia declares,

> . . . prior literacy skills must not be made a pre-condition to further education. The implication is that means must be found of providing education for the illiterate. His education must begin and proceed for some time--maybe indefinitely--without the benefit of the skills of reading and writing.[15]

Out-of-School Youth: The Issue is Practicality

Possibly more damaging than the failure of formal education to meet literacy demands is its inability to relate to the needs of those with "low IQ" or of "low schoolability." This failure has dealt a decisive blow to many nations' hopes of social development. Instead of creative programs designed to identify and work from the concrete conditions of the clients and devising means of bypassing illiteracy or their clients' inability to deal with abstract concepts, most LDC's have continued to rely primarily on traditional schooling concepts with its destructive selection process.

The assumption that a national educational program can reach only those who have achieved a level of functional literacy is both impractical and ineffectual. Despite the massive expenditures for schools and related expenses that occasionally claim over 1/3 of a nation's total budget, indications are that the absolute number of students not receiving a basic education will continue to rise in many countries. A recent report by UNESCO[16] on out-of-school youth in Asia revealed that out of 433 million young people (aged 6-18) in thirteen countries studied, 255 million or 52 percent will not be in school by 1980. This means they are projecting an increase in the number of out-of-school youth in these countries of over 58 million in less than a decade. The study also suggests that in at least four countries, India, Pakistan, Iran and Indonesia, 40 percent or more of those children aged 6 to 12 will be out of school by 1980. In Pakistan this figure is expected to be around 68 percent. Similar figures for Latin America are also available: In 1960, half of the children who entered school in Latin America never reached second grade and half of the second graders never made it to third. Three-fourths dropped out before learning to read.[17]

Give me a fish
    and I eat for a day.

Teach me to fish
    and I eat for a lifetime.

. . . folk proverb

Providing education has thus been idealized as an alternative to giving gifts. Providing means of self-help has been ascribed more value than providing direct assistance or "welfare" contributions.

As education becomes less directly involved with fishing, with eating, or, in fact, with anything directly and obviously related to living a more satisfactory life, education is said to have become formal. In such a condition, education is serving formalized pruposes and performing traditional roles; whether or not these purposes and roles are functional or pragmatically valuable has become a remote consideration.

The nomenclature of formal education makes a distinction between education and training, typically placing a premium on education and at the same time stigmatizing training. Even as training is better than giving, so education is better than training--according to the value system of formal education in this technological nation. Education (and by this is usually indicated the great amorphous totality of induced learning in a person's life) is the key to full and rich living. Never mind that it is also the induction to a life of competitive grasping after acquisitions, additives, resource-squandering and unnatural alternatives to what is otherwise one's lot and station in life! On the other hand, training is crass and mundane because it is temporal (ad hoc), practical and, by inference, non-intellectual. This distinction, untenable though it may be, has found its way into the thinking about values of education in much of the world--especially that part heavily influenced by American patterns. The current excitement about non-formal education in the developing nations suggests that the distinction between education and training is undergoing change. After years of eager emulation of the Western world's ladder-pyramid style of formal education, practical learning--and what in earlier terminology would have been called "training"--is suddenly acceptable and respectable. It is now called non-formal education!

Perhaps this oversimplified extension of the proverb cited above characterizes the essence of the new awareness:

Educate me in ichthyology
and I may someday eat--

--if I find a job as an ichthyologist
(or as a professor)

Teach me to fish (even if non-formally)
and I eat today!

Adult Learning

The dream of universal schooling is far in the future, if realizable at all. Large percentages of the populations of many countries will continue to live, learn and work in societies without the benefit of "functional" or even "basic" literacy. If an educational system devised to meet national needs cannot develop methods for reaching, motivating, and enabling its clients, literate or illiterate, to affect their environment, it will probably enjoy only limited success.

There are clear indications how such a program should be constructed. First, such a program must be capable of accurately assessing the learning style preferences and the developmental levels of the clients and then be flexible enough to adjust to their stage of cognitive development. Schools have proven notoriously incapable of adjusting to differences in learning styles and have effectively excluded those unable to cope successfully with the abstract, complex mental operations that schools assume to be basic to the most valuable learning experiences.

The non-schooled adult is not always unlearned or uneducated. Large amounts of knowledge relating to social and economic life have been learned through word-of-mouth transmission and through modeling. Social roles, agricultural and construction skills, crafts, history, language, and so forth, are passed on from generation to generation through an informal but often highly refined system of informal learning. Whether the learning takes place through informal tutoring, supervised on-the-job training, apprenticeship or by listening to stories and legends recounted by elders, the informally learned individual is primarily discovery-oriented and is usually operating at a concrete level of mental operations. In other words, the informal learner is exposed to and searches out answers to concrete problems such as those confronted in agriculture, irrigation, hunting, etc. Success, and the consequent reinforcement and retention of learning, is perceived not by abstract rewards such as grades or credentials, but by very real and immediate rewards such as physical health and survival and social well-being. The material, skills and concepts being learned relate directly and intimately to the concrete reality of the learner's world. Thus the informally learned person, in contrast with the formally learned person, would seem to be more discovery-oriented, more an organic, holistic learner operating at a concrete level of cognitive process.

Where this is the case, it would seem probable that informally learned persons, especially those who have relatively low literacy skills and levels of modernity, would have a natural learning style that is inconsistent with the pedagogical style of the formally constructed educational system. Lacking an educational process which will reach him at his level, the informally learned individual will almost certainly experience a high degree of frustration and failure in the schools and will either opt out or be shut out of the formally-sanctioned schooling system. In effect, he will be excluded from access to social credentials and relegated to personal poverty, powerlessness, and social unproductiveness.

Piaget's Contribution to Understanding Effective Learning

The need to reach people at this level of intellectual operation is extremely important in a successful non-formal educational program. Piaget's work in cognitive development relates directly to this problem and provides some significant implications for educational systems attempting to reach non-schooled adults.

Piaget finds that the human organism, through the biological functions of assimilation and accommodation, acquires increasingly complex cognitive structures during successive periods of growth.

As the person develops, *direct actions* pave the way for concrete operations, and *concrete operations* in turn enable *formal* (or propositional) operations--the ability to deal with abstract concepts and to act *upon* concrete operations. Each stage grows out of and at the same time is different from the stage which it supercedes.

Of the four stages which Piaget identifies, sensori-motor, pre-operational, concrete operations, and formal or propositional, there is considerable evidence that, as already suggested, most non-schooled adults have not yet entered the "formal operations" stage and are functioning at the concrete level. Both Goodnow[18] and Greenfield[19] found that without schooling adults perform little better on Piaget's tasks than do nine-year olds. Apparently schooling, or at least the kind of environment provided through schooling, creates conditions necessary for breaking up the concrete operational structures and building upon them with them, and in their place, the more complex structures of the formal (propositional) operations period.

What role does schooling have in developing formal operations? Two answers to this question have been suggested. First, school requires working "in your head." Both Goodnow and Greenfield observed that unschooled children rely more on external perceptual cues than do schooled children. Unschooled children learn by moving things and observing patterns. School experience promotes a shift to internalized modes of problem solving. It calls for thinking without immediate perceptual cues. It calls for thinking before acting. Goodnow notes that the four features of schooling mentioned by Bruner (that one adult is prominent, that the context is not immediate action, that imitation is less easy, and that words are a prime medium of instruction) all call for abstraction. She believes this fact accounts for the generally better performance of school children on tasks demanding non-motor representations.

Goodnow goes a step further in her discussion by suggesting that "school" is a crude and over-simplistic variable, and that we should consider alternatives to the "schooling--no schooling" variable.

Piaget voices a similar opinion that "general operations depend less on school than on the activities of children or . . . on the adult stimulations in the environment."[20]

If we find that non-schooled adults are operating at a concrete level, as revealed by performance on several Piagetian tasks, what would this mean in terms of the education process?

First, it would mean that we should communicate as concretely as possible, using illustrations from life situations with which adults are familiar, and for which they thus have readily available mental images. It would also mean using drawings, pictures, and tangible models, to present materials graphically and through the senses.

In addition, planning to communicate on the "concrete operations" level would mean providing ample opportunity for the learners to learn actively by manipulating their environment. We would provide for direct, on-the-job experiences wherever possible, legitimatizing the home, the field, or the factory as places to learn.

Further, since we are working with adults, and we assume that there is not a physiological basis for their development being arrested at the concrete stage, a knowledge of where these learners are and where they can go would make it possible to introduce systematically a series of experiences designed to develop their cognitive abilities and potentialities. We would create environmental conditions in which they would be encouraged to consider alternative solutions to problems, to manipulate some variables in their surroundings while they control others, and to engage in other complex behaviors associated with propositional thinking. Perceptual and motor supports for their actions would be systematically reduced over time. Because of the maturity and experience which adults bring to the learning situation, it is conceivable that a relatively short and intense educational program could bring them into the "formal operations" stage of development. Piaget has provided a theoretical framework for this undertaking; cross-cultural educators would need to develop the curriculum.

BEST COPY AVAILABLE

It could well be that a curriculum built solidly upon the knowledge Piaget has given us about how people think would prove to be more efficient and effective than many current development education programs which are poorly attuned to the cognitive structures and styles of the learners they are trying to reach. There is an overwhelming need to raise the educational level of adult populations in developing societies. Piaget's findings, applied to the specialized communication we call teaching, might go a long way in supplying the answer.

It is interesting to note that Freire's pedagogy, based on the concept of "conscientization," bears a striking resemblance to the transition from Piaget's concrete stage of mental operation to the formal or concrete level of operation. Rather than being bound by the mere ability to manipulate objects, Freire emphasizes the need for the learner to comprehend his culture and his ability to work upon his environment rather than being constrained by its mythologized immutability. Conscientization goes beyond the process of simply apprehending reality and helps the learner to "transform the world through man's reflection on himself and the world" and to take direct, considered action upon them. Freire explains the process as follows:

> The archaeology of consciousness implies only to invite men who are at the naive level of their consciousness, ideologized in a concrete reality in which they cannot express themselves, they cannot express the word, they don't know that they can know! To invite them in order to discover that it is possible for them to know precisely because men can know that they are knowing.[21]

Piaget's formal or propositional period has been described in remarkably similar terms. At this stage (the concrete or propositional) the learner becomes free of the concrete. He is able to perform operations upon the concrete operations. He can look at his own thinking, and his own ways of solving problems. He develops an understanding of chance and of the laws of probability. He can deduce what might be from what is.

The correlation between these two systems of thought, one developing out of extensive experimentation and observation of children

BEST COPY AVAILABLE

and the other from work with rural adult illiterates in Brazil and Chile, seems highly significant. From contrasting parts of the world, under dissimilar situations and on the basis of work with subjects of widely divergent ages and cultural backgrounds, highly complementary findings have emerged. Any attempt to develop a meaningful and effective system of education, particularly one designed to reach unschooled adults, should carefully consider the educational implications of these findings.

Havighurst's Basis for Effective Learning

Another aspect of developmental psychology also seems to have direct relevance to the establishment of an effective non-formal education system. Just as Piaget theorizes that the human organism evolves through a series of cognitive stages, Havighurst hypothesizes that humans also pass through a series of social or developmental stages wherein the individual confronts social as well as cognitive tasks. The importance of Havighurst's theses lies not so much in the universality of certain general developmental tasks, but in their capacity to analyze the socio-economic factors, including school, that assist or retard the successful completion of specific tasks.

> A developmental task is a task which arises at or about a certain period in the life of the individual, successful achievement of which leads to his happiness and to success with later tasks, while failure leads to unhappiness in the individual, disapproval by the society, and difficulty with later tasks.[22]

Thus the specific tasks confronted by the individual are defined largely by the social system in which the individual finds himself. The reward system that determines success and administers failure is therefore a reflection of the dominant value system, generally reflecting the standards of the social elite, and methodically discriminating against those from lower socio-economic groups and minority cultures. As the schoolboys of Barbiana poignantly observe, schools sometimes serve the basest functions in the social system:

> Cockney is not very different, but to speak it is to be marked. The English don't fail students in their schools. They divert them toward schools of lower quality. In school, then, the poor perfect the art of speaking badly, while the rich keep polishing their language. They can tell from the way a man speaks whether he is rich and what kind of work his father does. Comes the revolution, they can disembowel each other with ease.[23]

While Havighurst applies his theories almost entirely to the U.S. situation, many of his general observations seem equally valid in other cultural contexts. For example, in his section on "Developmental Tasks of Infancy and Early Childhood," Havighurst makes the following comments that are as true for the poor of most developing nations as for the lower classes of the United States.

> The human mind literally grows on the basis of the language environment provided for it during the preschool years. Psychologists have found a major difference in the "diet" of language given to children of middle-class and upper-class homes, on the one hand, and the much less rich language diet which most working-class children receive in their homes. Parents with above-average education and social status use a conversational language that is more complex than the language used by parents with below-average education and social status. The "elaborate" language of the middle-class home consists of longer and more complex sentences, a wider vocabulary, and more adverbs and adjectives than the "restricted" language of the typical working-class home . . . and middle-class parents are more likely to read to and with young children. Thus there is a "family factor" in the language and cognitive development of the child which is closely related to the social class of the family.
>
> The typical working-class family thus confers a relative disadvantage on its children with respect to their language and cognitive development, which makes it more difficult for them to succeed in the primary grades of school, where the teacher uses an elaborate language which is much like that which the middle-class child has learned in his home.[24]

Havighurst goes on to outline a lifetime of developmental tasks which is specifically significant because of the relationship he draws between the tasks being confronted by the student and the role of the school in helping the individual to complete these tasks. In most cases Havighurst finds that schools have operated largely at the expense of students' social and emotional growth. Schools have, for the most part, ignored the levels of individual development and the nature of the learning tasks the student is facing. Little attention has been given to differentiations in rates of biological development while cultural differences have been all but ignored. Schooling has become a sequential series of tasks developed outside of the student and imposed upon him, complete with its own standardized objectives. The student's options have been either to conform to the demands of the school--whether or not the activities conformed to his level of psychological or social development--or to opt out of the system altogether. In some countries "opt out" means leaving; in others it may include the possibility of staying in physically but not mentally.

Havighurst further implies that many times the real developmental tasks being confronted by students are actually made more difficult by the rigid, insensitive nature of the classroom. When these tasks are accomplished (socialization, for example) it is often in spite of the school environment rather than having been facilitated by it.

While many of the details of Havighurst's theory may be disputed, his fundamental message is clear and convincing--to be truly effective an educational system must be able to identify the developmental tasks being confronted by its students and be able to create programs to assist them in their efforts. Implicit in this is an understanding of the tasks and problems resulting from different socio-economic backgrounds.

It is clearly absurd to expect a 40-year-old illiterate peasant to possess the same cognitive processes and to have the same needs and concerns as a child of an urban, middle class family. Yet this has been precisely the assumption upon which most formal education systems have operated. There has been little effort to assess the needs of the clients or to offer optional learning situations. Formal education has been largely ineffective in meeting the demands for alternative learning styles; it has shown itself capable of serving only those segments of society who can emotionally, culturally, psychologically and pedagogically conform to its demands.

If "effective learning takes place when educational opportunity intersects with vital daily concern,"[25] then formal education, with its inflexible programs of pre-determined curriculum, lock-step labor, use of arbitrary time blocks, teacher or "depositor" centeredness, and use of the control model for classroom management, seems highly unlikely to provide much "effective learning" on a broad scale.

Human Needs as the Basis of Learning Effectiveness

Learning does not have to be coerced or artificially reinforced. Maslow asserts that behavior is motivated primarily by the desire for fulfillment of perceived needs. Bruner states that in regard to learning, these needs are intrinsic, and provide constant, universal motivation for learning that needs only to be perceived and tapped into by the educator.

> The will to learn is an intrinsic motive, one that finds both its source and reward in its own exercise. The will to learn becomes a 'problem' only under specialized circumstances like those of a school where a curriculum is set, the students confined, and a path fixed. The problem exists not so much in learning itself, but in the fact that what the school imposes fails to enlist the natural energies that sustain spontaneous learning--curiosity, a desire for competence, aspiration to emulate a model, and a deep-sensed commitment to the web of social reciprocity . . . .
>
> External reinforcement may indeed get a particular act going and even lead to its repetition, but it does not nourish, reliably, the long course of learning by which man slowly builds in his own way a serviceable model of what the world is and what it can be.[26]

Non-formal education, on the other hand, is in a far better position to respond to the needs and situation of the individual learner, and thus to motivate. Non-formal education is largely voluntary, in that the individual is not coerced into participating but rather sees a concrete benefit accruing from his participation. Unlike the school, participants are drawn to nonformal programs because they are offered a desirable skill or direct assistance in relation to their attempts to better understand themselves and their world. If the education offered is of no value to the learner's life or does not better equip him to deal with the tasks he is confronting, he will simply refuse to participate further and the program will die or be obliged to become more meaningful.

Much non-formal education is a response to needs and articulated desires. To a greater extent than in formal education it relies on its clients to initiate programs and to determine objectives. Thus, by its nature non-formal education can be flexible in pedagogy and content. It is not usually bound by certification requirements or other restrictions which limit the facilitator's ability to respond to the changing needs of the clients. Non-formal programs can and must change depending on the local situation and the developmental level of the clientele.

Learner's Views of Themselves

Formal education's insistence on uniformity of operation and performance has a negative effect on the self-esteem of the unsuccessful participant. This reduced self-concept virtually insures continued failure in the schooling game. As Brookover *et al.* (1967) found, ". . . self concept of academic ability is significantly correlated with school achievement. Self-concept accounts for a significant portion of achievement independent of measured intelligence, socio-economic status, educational aspirations, and the expectations of family, friends, and teachers."[27] Although not all who have a high self-concept have high achievement, those who have a high achievement have a high self-concept. "Practically none of the students with low self-concepts of ability achieved at a high level."[28]

In Coleman's widely discussed study of educational equality (1966), three variables were most strongly associated with achievement: (1) student's self-concept, (2) high interest in school and learning, and (3) sense of control of his environment. And while these variables "accounted for more of the variation in achievement than any other set of variables (all family background variables together, or all school variables together),"[29] they are closely related to the socio-economic status of the learner.

Coleman[30] and Brookover[31] for example, found a significant correlation between a student's sense of control over his environment and actual academic achievement for all racial and socio-economic-status (SES) groups. Coleman concludes that

> . . . a different sort of predispositional factors are operating to create low or high achievement for children from disadvantaged groups than for advantaged groups. For children from advantaged groups, achievement or lack of it appears closely related to their self-concept: what they believe about themselves. For children from disadvantaged groups achievement or lack of achievement appears closely related to what they believe about their environment: Whether they believe the environment will respond to reasonable efforts, or whether they believe it is instead merely random or immovable . . . . It appears that children from advantaged groups assume that the environment will respond if they are able enough to affect it; children from disadvantaged groups do not make this assumption, but assume in many cases that nothing they will do can affect the environment--it will give benefits or withhold them but not as a consequence of their own actions.[32]

This fatalism and feeling of impotence is a product of an environment that oppresses the individual into a state of helplessness and hopelessness, a condition that is reinforced by schools that underscore the existing feelings of low self-esteem and inefficacy. And, given the language and cultural backgrounds of most poor, lower socio-economic-status students, there is little doubt that such feelings of low self-concept and impotence will indeed be present and reinforced. As Shrank found in his study of self-fulfilling prophecy when individuals were randomly assigned to achievement groups in simulated classes with ability level designations,

> . . . a pupil placed in a lower-label ability group for any reason whatever is handicapped for as long as he remains in that group, and a pupil placed in a higher-label ability group is provided unfair preferential treatment.[33]

Amarjit Singh (1972) in his cross-cultural study of Brookover's theories of self-concept of ability and school achievement, offers some important conclusions.

If schools were to be designed on the basis of the theory and findings of this research and related research, curricula and programs, the resources of community, family, and schools would be geared towards enhancing the self-concept of ability of all children.

The main function of schools will not be sorting and labeling students and putting the round pegs in round holes by using the assumed criterion that learning ability among students is differentially distributed due to inborn differences. Early selection, grouping and streaming practices based upon assumed level of fixed ability would not be practiced in schools. The task of educators would be to create conditions which would facilitate the process of self-concept enhancement as early as possible and to exercise judicious surveillance.

The social responsibility of schools would be to increase the 'collective ability level' of the students and, ultimately all of society.

The self-fulfilling prophesies that perpetuate social inequalities through schools by means of selection and other processes would be analyzed in the light of contemporary demand for social equality and social justice in the distribution of social rewards.[34]

The Search for Alternatives

Piaget, Freire, Havighurst, Coleman, Brookover and literally hundreds of other psychologists, educators, sociologists, and philosophers have indicated clearly where education should be and where, instead, it wallows in inefficiency, crusty rigidity and stubbornness. Most of these critics advocate changes of the existing educational system and there is ample evidence of the need for dramatic efforts in this area. There are two sorts of alternatives to be sought: the first and most historically venerable is the improvement of the schooling establishment itself. While not at all a new or untried idea, its past record of relatively low success does not inspire confidence. The second sort of alternative to schooling as it is known today lies in the development of resources for learning outside the school. The concept may be new, but the entities and programs it embraces are as old as education itself. Indeed the only thing new about the field is the term "non-formal education!"

Non-formal education, especially if viewed as a set of alternatives to the formal systems of education, offers a way to devise an effective approach to learning and education. To enhance learning effectiveness, non-formal education must avoid the pitfalls of formal education, meet the growing needs of LDC's for involving their citizenry in the critical porcess of nation-building, and incorporate the wisdom and findings of contemporary educational critics.

While certainly not a panacea, non-formal education has tremendous potential and promise. Where formal education illustrates, by inference, where education could be, non-formal education is, to a great degree, already there. The legitimacy of schools is based upon their role as credentialing agencies while non-formal education will derive its legitimacy only from its ability to meet real social needs.

Most school critics, in one way or another, assail formal education for its inability to identify and satisfy the real needs of its clients--all of its clients not just the narrow elite it all too often serves exclusively. Non-formal education, on the other hand, starts from the assumption that effectiveness necessitates perceiving and meeting actual needs the people, including the old, the poo , the illiterate, and the unschooled. In fact non-formal educational programs include those rare efforts seriously dealing with the problem of reaching the masses of people rejected as "unsuitable" by the schools and those who are too old or too poor to participate in the schooling game.

Defining Non-Formal Education

A comprehensive and standard definition of non-formal education is not yet available in common usage. Perhaps such a definition will not emerge until after much more study of the educational issues and potentialities inherent in the variety of experiences now called non-formal education has been done. The implied and real distinctions between formal and non-formal education should be seen within a systematic and holistic view of education. It seems useful at present to provide a tentative definition of our usage of the term "non-formal education," in order better to identify our current view among the many variations. Whether or not the term "non-formal education" is viable in the long run, it is useful now to highlight alternatives to formal, institutionalized, educational enterprises. To use such a term is an honest yet unfulfilled attempt to distinguish among the major educative forces in a society.

Virtually all uses of the distinction between formal and non-formal education seem defective. The distinctions seem too arbitrary to be supportable as part of a coherent theory. The formal/non-formal distinction is at best a sub-division of some larger construct. The problem up until now is that non-formal education has been relatively undefined because the non-school sector of education has been of little interest and concern to educational planners. Thus, though we now need a term to designate this large and sprawled sector of educative resources and operations, the best distinction we can make is arbitrary and disjunct from systematic theory.

Taking the largest possible view, we see that educational operations function within the context of a society; and since a society, through its educational enterprises, creates formal and non-formal educational institutions, we can examine the whole function of education for a given society. By focusing on the gross categories of educational functions, we may be able to see what is formal and what is non-formal within education. Figure 1 attempts to do this. This figures is a generalization drawn from the anthropological view of institutions and their sources of authority.

Sources of Authority is dichotomized into two codes that govern the social mandates (authorizations) of education. Norms are the informal socio-cultural codes. Policy, on the other hand, is the formally structured and superintended instituting of education by some formal authority in the society. (This could be anyone from the local teacher to the national minister of education.) In contrast, the family, neighborhood and peers educate the child or the new comer

Categories of Educational Function in a Society
Methods of Instruction

		COVERT PROCEDURES		OVERT PROCEDURES
SOURCES OF AUTHORITY	NORMS (informal codes)	1		2
		3a	"non-formal"*	4a
	POLICY (formal codes)	3b	"formal"*	4b

*An arbitrary distinction drawn from the administrative structure style, and label-designation of the educative agency.

Figure 1.--Educative Functions in a Society as Reflecting Methods of Instruction and Sources of Authority.

towards informal goals and by informal means through extra-legal authority (namely, social norms).

Methods of Instruction is dichotomized into overt and covert, indicating the extent to which deliberateness is reflected in discrete, identifiable and obvious procedures in executing the educative functions. Overt procedures are the easily identifiable and structured modes used by society's institutions to teach. Covert procedures are the more subtle, enculturating process--the "caught" teachings presented to each learner throughout his lifetime by all the functions of his society. For example, the family rarely uses overt modes to teach the skills of speaking the mother tongue; the school rarely uses anything other than overt modes to teach a second language, yet it may use only covert modes to reinforce and enrich the fluency of mother-tongue speech.

No function of society falls exclusively into any one of the cells of this chart. In various realms and on various occasions school, family, religious orders, government and community exercise the authority of norms or the authority of policy and instruct in covert and overt ways. The usefulness of the chart is more in its raising of productive questions, e.g., when does the family employ overt modes? On what educative matters does the church establish policy? In what matters is the school operating in covert modes?

The formal/non-formal distinction now gains perspective: as typically used the term "non-formal education" indicates an arbitrary sub-division of the authority-by-policy sectors (cells 3 and 4). The distinction is made (as suggested above) in terms of the administrative structure, style, and labeling of the agency. Note that "non-formal education" does not ordinarily apply to the authority-by-norms sectors 1 and 2. (Sectors 1 and 2 are the arena of socialization and enculturation which are more correctly called "informal.")

Elementary and secondary schools, as well as colleges and universities, are primarily engaged in cell 4 operations, and since they are formally designated as "schools," they can be considered cell 4b operations. But note: the school also operates in covert ways to carry out both policy and norm-authorized learning (cells 3 and 1). Schools infrequently engage in cell 2 operations, for the important reason that schools, as formal institutions have their authority in policy; when a school overtly educates, the authority is that of policy. For example, a local school may impose an informal community standard of conduct or dress. But in doing so, the school makes it a matter of policy, e.g., "dress codes, and conduct policies."

In Figure 2, education within a society is viewed from another perspective in order to provide an additional clarification. A "where/how" view of instruction is the focus of the concept. One continuum is "where" instruction occurs, i.e., the setting. It asks whether the setting is more flexible or less flexible.

The Where/How View of Instruction

Where? (The Settings)
Continuum

	More Flexible	Less Flexible
INFORMAL (casual, norms)	Socialization	Schooling as Socialization
PLANNED (programmatic via policy)	Extension	Schooling as Formalization

Figure 2.--Educative Function in a Society as Reflecting the Settings and Modes of Instruction.

Setting. A less flexible setting is one in which the environment places a great deal of constraints upon the learner. It is a setting where people assemble to learn under the constraint of that environment. Usually the less flexible learning environment is fairly rigid and exacting. A more flexible setting is the learning environment more characteristic of out-of-school learning. It is characterized by fluidity and lack of narrow constraints on behavior and subject matter. For example, the school classroom is a less flexible environment and the school playground a more flexible one.

Modes. The second continuum is "how" the instruction occurs. It asks the question whether the instruction is informal or planned. The informal mode is casual, based upon social norms. This mode can be found in either the more flexible or the less flexible setting. In contrast, the planned mode is a systematic attempt to instruct, based upon some sort of educational policy. It has a programmatic sequence and approach to what is taught. It, too, can be found in either setting.

The distinction here between informal and planned modes allows us then to draw a four-fold table and makes the formal/nonformal distinction easier to see than does Figure 1. These distinctions also suggest that from a social anthropological viewpoint, we have mapped the differences between education that occurs within a formal institution and education that occurs in the remainder of a society's institutions. The processes of socialization or enculturation include the casual handing down of knowledge, skills, and attitudes in flexible environments in order to bring people into a culture. When these casual things are done in fixed or determined ways, it is generally thought of as schooling. Schooling in this aspect, can be seen to be part of socialization. The school has an effect because it exists. It has an effect even beyond its structured curriculum. A number of people writing in the field of curriculum since the decade of the 1930's, have been pointing out that there is often a great distinction between what the school thinks it is doing and what it is really doing! (This distinction concerns outputs of the school that may or may not be antithetical to its stated goals.) Schooling, in the sense that it operates casually (imposing norms) is socialization; in the sense that it operates in a structured way it can be said to be formalization. The curriculum is formal, but the school teaches far more than it admits to its curriculum!

Non-Formal Education as Extension. For some of us the most intriguing cell in Figure 2 is the more flexible approach to planned instruction which is labeled "extension." ("Extension," in this diagram, is virtually equivalent to the term "non-formal.") In deliberately planned non-formal education, the motive is to take education to the people. This sort of extension is happening in the sidewalk colleges. It is happening overseas in church-related operations such as the extension theological education movement. These are exciting efforts to bring educational opportunities closer to the people and to open more alternatives to formal schooling experiences. In doing so, the movement is toward a more flexible environment, and in some cases, toward a more casual mode.

From Figures 1 and 2 we can arrive at a tentative understanding of the major elements that go into a definition of non-formal education. These are as follows: (1) authority for content is based on policy; (2) both covert and overt procedures and methods are used;

(3) instruction is planned, systematic and follows some sort of organized program; and (4) it occurs in a more flexible setting. If we put these all together we arrive at this tentative definition: *Non-formal education is a planned instructional design which uses both overt and covert procedures in a more flexible environment to teach towards a goal determined by a regulated policy authorized by an institution of that society.*

Non-formal education focuses on practical, functional, and often, work and job-related education. This distinction can be seen in Figures 1 and 2. A primary value reflected in most non-formal education is the immediate usefulness of education, in terms of personal growth and occupational enhancement. A second predominant value is person-centeredness. Since those who are engaged in non-formal education are usually keenly aware of the practical and immediately useful goals for their educational experiences, they tend to center the instructional approach on the particular or categorical needs of their learners. In other words, non-formal education is need-centered. Particular content is determined by identified student needs. A third element is that often there is no certification of the instructional staff. As often as not, the teachers are those who themselves have mastered the cognitive-affective-psychomotor skills involved but do not have formal accreditation, at least not in the sense that accreditation is used in the area of formal education to signify eligibility by virtue of a particular amount of formal education.

Relationship of Formal and Non-Formal Education

Non-formal education seems difficult to define and to conceptualize except in juxtaposition to formal education. This is unfortunate since it may connote antithesis. Rather there are several positive relationships which point to synthesis.

First, it is becoming obvious that few if any of the developing countries are wealthy enough to support two major national and competitive educational schemes, especially if they are in conflict. To do so would debilitate both personnel and financial resources and would tend to divide the country's resources than to unite them. It is much more intelligent to consider a single, workable educational program rather than to seek to build new or enhance alternative educational programs. Interestingly, there are a number of non-formal alternatives already showing themselves in many countries. The question then is what to do with them: allow them to continue to develop as competitive, alternative systems; repress them; adapt the formal educational institutions for the formal model; or integrate the whole into a broader concept and plan for educational development?

Second, while in theory the goals of formal and non-formal education seem to be different, in reality both are attempting to do many of the same things, but from different perspectives. Both are trying to bring a people and an economy to increased personal and national productivity. Both formal and non-formal educators are aware that education, of the right sorts, is an important instrument for national development.

Third, both approaches to education often use similar if not the same methods and materials. Even where this is not the case, minor modifications would enable the use of many instructional materials interchangeably between formal and non-formal systems.

Non-formal education is seen to be responsive to the cry of the masses for relevant education. Formal education has been beset with this demand for a long period of time with relatively little response. Now that alternatives to formal education are being planned and provided, formal education itself is belatedly attempting to become more practical. Thus the formal institutions are becoming somewhat less rigid and are patterning their approach closer to the non-formal model--suggesting points of ultimate parallel in materials and procedures. This can be seen most clearly in extension programs and in uses of radio and television to extend the schooling system.

Fourth, though both non-formal and formal education are working to increase the national level of education for national and human resources development, they are both frustrated. Both non-formal and formal education realize the enormity of the task in terms of personnel, finances and material. Formal education is beginning to recognize that it has not met the expectations of either its constituents or its own leaders: the problems have overcome the promises. Non-formal education, however, has several things in its favor that formal education does not. The fact that non-formal education exists in more flexible settings, is person-centered, focuses on practical uses of knowledge, and yet is systematic all tend to make non-formal education more effective and efficient for development. So then, while both formal and non-formal education are facing similar frustrations, they do so for different reasons: formal education because of its lack of efficient effectiveness, and non-formal education because of its inability to do more of what it is quite good at doing.

It is quite conceivable that non-formal education holds the key to learning effectiveness for both formal and non-formal modes. Formal education needs to continue to study the reasons for success of its non-formal counterpart and seek to adopt and adapt these to its own programs. On the other hand, non-formal education needs to learn from its more established counterpart some of the lessons of educational life, instructional design, and learning theory, to name just a few areas, so that it will be able to increase its efficient effectiveness in instruction.

It is necessary to add a cautionary note. Non-formal education is regarded by many as "anti-establishment" education. It is often promoted as the antithesis of formal or institutionalized education. There is much room for doubt about this generalization. Especially since established educational agencies and institutions are getting into non-formal education the scene is changing. Whenever the "establishment" begins to use any devices or procedures (whether or not they are "non-establishment") in order to achieve "establishment" ends, they become "establishment" functions. The distinction between formal and non-formal education is thus not the same as between establishment and non-establishment efforts.

Learning Effectiveness as a Political Issue

Perhaps one of the key elements in the controversy is that schooling has failed--not necessarily that education has failed. There is a high probability that under certain influences and in certain hands non-formal education also will fail. The issue is not necessarily school versus education, or schooling versus non-schooling, or anything of the sort. It is simpler than that: effective learning is the issue. In our own domestic situation, and also on the world scene, we are just now coming out of an era of "oversell" in education. During the emergence of nations of the "Third World," we have seen a kind of blind grasping for the economic and welfare gains that are thought to accrue from education. The result has been that the modes and norms of education that have been grasped have been largely built upon models of education essentially foreign to these nations. Most of these models were created on common Western European and American concepts of educational design and institutional management which often were irrelevant to other countries. As we emerge from the era of oversell, frustration has set in and there is a feverish search for alternatives--simple and culturally relevant ways to provide effective education.

Peter Drucker has made a useful distinction between effectiveness and efficiency. The characteristic American aspiration is for efficiency, which Drucker defines as ". . . the art of doing things right!" Effectiveness, on the other hand, is "the art of doing the right things."[35] Great is the distinction! We need both efficiency and effectiveness in education. We must assure that educational functions relate to societal welfare, broadly and specifically defined.

As outside consultants and helpers, we must find ways to help without exploitation. The emphasis on non-formal education is not an automatic preventative against further exploitive operations. In fact, given the hands and given the motives, manipulated non-formal education can be as exploitive as any other form of outside management of institutions. Those who want to help must be constrained by a commitment not to repeat the impositions of technocratic achievements that have accompanied some "helping" activities in the past. As we begin to employ non-formal methods and modes, there is a need for a much more clear-cut theory of educational functions within a society. Such theory must be drawn from sociological, anthropological, and psychological sources. Our tendency in the United States has been to draw very heavily from psychological theory and to be less careful about drawing from anthropological and social theories as they relate to education. Today's current fad of over-individualization of instruction (in which learners are sometimes "individualized" to the point of isolation) results from this tendency. A socio-anthropological view is concerned about the interaction of learners for their educational good. Adequate theory for the planning of educational functions within a society must be drawn from the whole range of the social sciences.

What is education within a society and how does it function? Here is the primary question that must be answered before beginning to innovate. The emphasis on non-formal education is less a matter of new information or ideas than it is a matter of new focus or emphasis. Non-formal education is now coming into primary focus in its own right. But if it is to be used responsibly as a total educational plan for national development, it must be seen in relation to the whole of the educational efforts that exist within a society.

One of the problems in education as it relates to national development is the tendency to state goals too generally. Usually when people come to a point of frustration in defining their goals, they adopt, instead, goals that seem to be self-explanatory. In other words, they will adopt a generalized statement that is supposed to define itself, and they substitute it for the very difficult work of really defining the appropriate educational goals. In many cases this tendency has been seen in the relating of formal education to national development. It is not that formal education is irrelevant but that it is not given a chance because its goals are not clearly brought into alignment with the fulfillment of stated national needs.

In our eagerness to help in national development we may tend to bring goals that we have developed in our own framework (in another part of the world) and use them as substitutes for locally defined goals. The real question is what sort of education will most effectively relate to the next steps that can be justifiably taken? Involvement of American public and private agencies in national development overseas must be disciplined by objectives defined within those national situations. It is necessary to clarify the needs to which education is to be related.

Non-formal education is not a compromise. It is a response to a "now" situation. We have before us an occasion to revise and to innovate instructional modes. There is an exciting possibility that the non-formal education movement will open the eyes of the world to see alternatives to traditional didactic approaches to instruction. Also, we have an occasion to involve ourselves as technician-helpers rather than as goal-setters.

The Hopeful Future for Non-Formal Education

People learn. Institutions teach. Some people are more effective learners than others. Some institutions teach more effectively than others. Any person can learn certain things better than other things. Any institution can teach certain things better than other things. Learning is at its most effective when a person is learning those things he learns best in the context of the institution that teaches those things best. Effective learning is necessarily involved with people and with institutions.

Inherent in our treatment of the elements of non-formal education are suggestions of what non-formal education promises to its practitioners and leaders. The first is that non-formal education promises to be a more effective approach to relating education to national development. Closely related to this is a second promise: that non-formal approaches offer education that is functional and practical, i.e., related to the life-needs of the people. It is probably true that practicability enhances effectiveness and effectiveness seeks to be practical. Non-formal education promises to start with the felt needs of the people in order to help them achieve their goals and by so doing helps the nation to develop. It does not take much imagination to perceive the relation of practicality and effectiveness.

Third, non-formal education seeks to maintain a benefit/cost consciousness of what it does in order to *provide the most effective and purposeful consequences with the most efficiency*. There is an awareness of the potential contributions of instructional technology and communication media and principles that will reduce the amount of personnel while increasing the amount of impact. Involved in efficiency and effectiveness is the inherent commitment to seek for innovative means to achieve the goals. *Innovativeness*, the mentality that looks for new, renewed or rejuvenated approaches to old problems is the fourth promise of non-formal education. People in non-formal education are apparently less inhibited than those in formal education--not afraid to ask for a different approach, to try a new procedure or an unproven idea.

Fifth, non-formal education offers a more eclectic, multidisciplinary approach to the problem of development in a country. The tendency to look towards one discipline for the solving of all problems is seen as insufficient. Instead, numerous disciplines are sought out in order to arrive at workable solutions. Formal education has, unfortunately, tended to isolate itself from its own basic disciplines--particularly in the social sciences. The resultant promise of this type of approach to education is that decisions and programs will be developed from a holistic view of the learners, their own sub-cultures and the larger society.

Sixth, non-formal education promises to produce *short-term effects as well as long-term achievements*. A developing country cannot wait decades to achieve progress. People throughout the country want to have certain improvements as soon as possible. Non-formal education promises such accomplishments. True, such short-term gain may have more political than economic value, but the tenuous condition in many developing nations demands movement towards development of the entire population rather than merely an elitist few.

Seventh, non-formal education assists in the decision-making of educational and developmental funding agencies on both a national and international level. This is possible through the effects which can be observed after a short duration. The agencies do not have to wait for a whole generation to grow up into leadership before results can be assessed. Rather, effects can be sometimes seen in just a few weeks or at most a year or two, allowing funding agencies to make assessment and reassessment of the consequences of a program over a relatively short time. Related to this is the eighth promise, namely, that non-formal education provides a more rapid and immediate measure of the effectiveness of instructional design. The objective of the non-formal educational processes are usually defined in the short-range, thus making intended behavioral changes, even though small, visible more rapidly. This, in turn, allows for prompt feedback regarding the relative effectiveness of the instructional design. Continuous analysis is possible, leading to continuous modification of the procedures to meet the needs, goals and expectations of the participants.

Problems Confronting Planners of Non-Formal Education

Non-formal education is confronted by several problems. The first is the tendency in many developed as well as developing countries to have a blind faith in instructional technology and media--especially the mass media. That these tools hold tremendous promise as part of the solution to development by education is unquestioned; but the tendency is to invest national programs in the facilities before more basic questions of needs, goals and availability of instructional resources (personnel and material) are answered. It seems that advisors to non-formal education development must take care to avoid catching this "disease" from their clients!

Second, there is a closely related problem of avoiding the serious and difficult ground-work of cultural and sub-cultural analysis, goal setting and resource inventory before designing a delivery system. The great temptation is to adopt someone else's system "lock, stock, and barrel," or to develop a new system without knowing enough about the basic and determining factors in the environment of the learners. Again, the consultant's responsibilities are to ask the hard questions that must be answered before proceeding into the actual development of an instructional system.

Third, it is evident from our observations that in some developing countries (as in the United States) bureaucratic conflicts are a practical problem with which one must deal. Jealousies and political fighting within, between and among bureaus and ministries can be a problem. It would be naive for planners and consultants on non-formal education to think that they will not be involved in the politics of bureaucracy. We will have to figure out how to work as much as possible within the existing bureaucracy without adding to it and without becoming frustrated.

Fourth, non-formal education can be oversold to developing countries. The result could be the promise of meeting needs that simply cannot be met because of limited resources, in terms of personnel, finances and material, and too little time to develop an instructional design that fits a particular group, sub-culture or nation. In other words, non-formal education might be seen as a panacea--but without the time necessary to develop workable procedures and without the required resources. Advisors to the developing countries will have to bear in mind that although non-formal education does produce short-range change, it does not produce a full-fledged national development program within a short period of time. It must be remembered that even though a pilot project can demonstrate its significant effectiveness, this is not a fully developed program for the masses. Mass education does take time to be developed. It would be wise, therefore, to have realistic expectations regarding the changes that non-formal education can produce within a limited time period.

It is not surprising to find that the ministries of education in various developing nations are thinking seriously about alternate forms of education. Virtually inseparable from the revolutionary motif is the redesign of institutional forms. It is very apparent that leaders in education in Peru have been reading the major world figures in educational reform. Specifically, the influence of Paulo Freire can be seen in the emphasis on conscientization within literacy and basic community and rural development programs; and the influence of Ivan Illich can be seen even in the titles of the documents produced by the ministries of education, as in the 1973 Peruvian publication entitled "Guia para la Aplicacion de Programas Desescolarizados de EBL." In some respects the attention to the essence of revolutionary thought in education is less evident than attention to facade. Specifically, there is good reason to wonder if conscientization is not merely being used as a camouflage for larger and slightly more effective programs of literacy, and if "de-schooling" is not being reduced to merely a label covering some rather school-oriented sorts of activities--legitimatized because they are being done outside the regular school buildings. Two basic problems seem to be embedded in the conceptual structure through which many ministries of education are dealing with non-formal education--or what they usually call "adult education." First, too commonly, the ministry of education operates as if other agencies and ministries are not already deeply involved with adult education and community development. Though the ministry may point to a coordinating council through which policy and specific program clearance is coordinated with other units of the government, conversations with people involved in various other ministries leads us to seriously question whether or not the problem lies at so easily accessible a level. For example, the definition that the ministry of education uses for "adult education" may be so narrow as to remove from consideration the great variety of training projects conducted by the ministries of agriculture, health, labor, industry, and rural development. Any modern concept of adult education may reach out in so many directions through its "adult education" and "de-schooling" operations that it unknowingly duplicates and vastly competes with existing programs. (An equally hazardous extreme would be for the ministry of education to seek to bring all of these programs under its own control and jurisdiction.)

Second, there is quite clearly a tight grip on the old schooling concept. It is easier to think of non-formal education or "de-schooling" as a change of delivery systems than it is to think of a fundamentally reconceptualized education. Much of what is being described today as "non-formal education" will ultimately fall back under the rigid framework of the step-wise schooling concept. Although we co not argue against the value of schooling for some purposes, the very limitations of step-wise concepts of education are part of the drain upon resources of all nations. When we find, for example, that one of the models most widely promoted as exemplary "non-formal" education is that of the British "open university," we must seriously consider that such a view of non-formal education is certainly not equivalent to de-schooling! The open university idea suggests a system of examinations through which people can obtain schooling credits for studies gained through alternative procedures. The alternative procedures, once created, would feed into a system that still sees the formal education establishment as the standard and the ideal.

We must question whether or not ministries of education are the most promising units of government through which to stimulate non-formal education. In certain nations where the development scene is rich with various forms of non-formal education, the ministry of education is far from the most influential ministry and often it lacks experience in inter-ministry cooperations. The continuing boundary of thought seems to be located just about where the ministries of education characteristically have seen their limits: if it isn't a national-scope centralized program they don't respect it. Outstanding rural development, community development and other successful programs of non-formal education are sometimes criticized out-of-hand by the ministry of education people: "They aren't as good as formal education because they are too local--too much related to a unique community--not really a program of national scope." Yet a close look reveals that the people from the ministry of education who make these criticisms are essentially a group of strangers to non-formal education. Other than for a few untested ideas about alternative delivery systems for classical schooling, they don't even talk the language of non-formal education.

No wonder that we find genuine fear on the part of community development workers--fear that the new wave of interest and promises of support are but the front edge of a steamroller of control and ultimate assimilation.

In certain situations there is such a high degree of political sensitivity that every act seems to have a political meaning. Only the most irrelevant, abstract of roundabout forms of education are encouraged by governments that fear the uprising of the peasant classes. Yet, clearly it is exactly these peasants who have the greatest needs for human resource development.

Much non-formal education operates today without benefit of government support or regulation. And we believe that is as it should be. When government moves into non-formal education some things change. Especially at the village or local community level such changes are a threat. Consider the loss of effectiveness when the new non-formal education technician (agent or instructor) is perceived as a government agent. The program no matter how good it is, will be less effective than it was under the person who was there before--who was known not to be a government agent. Confidence and credibility are fragile. Government support, among people who have no strong reasons for confidence in that government, will run the risk of becoming an overpowering phenomenon. The focus on learning effectiveness involves issues of political initiatives; it is likely impossible for any aspect of non-formal education, even the elemental aspects of effectiveness, to be free from political implications.

Whether we do it naively or knowledgeably, if we work in non-formal education we must be willing to face up to the political realities and the political conditions that exist at the community level. There are two problems: (1) the somewhat insular thinking in the administration of education that tends to assume that anything educational is the responsibility of "educators," and that when anyone else is engaged in anything called education (such as rural adult education for agricultural development) the ministry of education somehow ought to have its hand in it. If this problem were a basic issue in the United States, the County Board of Education would take over all agriculture extension work. People with "Education" as their label tend to use classrooms a lot; they tend to do things that schooling-type people tend to do--not because they believe that it is better but simply because they tend to think this way about organizing learning. Especially in countries where non-formal education is well developed in agriculture, and in the ministry of industry, the ministry of commerce, and all those other sectors where, for a long time there has been non-formal education, a danger now exists that new jurisdictional battels will break out. The ministry of education is waking up to the fact that you can call these operations non-formal education; and so maybe they ought to be under us.

The second problem occurs in the local community when a government agency (whether the ministry of education or the government as a whole) fears anything that it does not operate. We have observed many valuable educational projects that aren't financed by governments, and there is a danger of losing some or all of these in a massive total bureaucratic absorption of the whole of non-formal education in order to create a government-mandated and supported system of non-formal education. That this might happen has made us more than a little anxious.

Through experience in consultation with formal and non-formal education and through experiences with the manifest attitudes of governments, we have noted an unhealthy condition: anxious governments tend to divide educational operations into two classes--safe and unsafe. By "unsafe" we refer to politically unsafe or politically dangerous. Formal schooling is seen as "safe" because it is assumed to be manageable. Within formal education, the curriculum is structured and can be centrally controlled from an office in the ministry of education. Thus it is assumed that formal schooling can be made responsive to government policy.

By contrast, the sort of educational opportunities that operate outside of the government, through philanthropy, commercial or industrial initiatives, self-help within communities or through governmental aid from other nations are suspect if they do not allow for being regulated as does the formal educational establishment. Community development, for example, is usually concerned about health, welfare and human rights--more concerned about basic human needs than about schooling or making people more schoolable (making people able to pass tests). Such educational activity is thought to be "unsafe."

The distinction is not realistic. In reality, any education delivered meaningfully to the peasantry in an underdeveloped nation is potentially revolutionary. Governments are deceiving themselves by making the distinction between "safe" and "unsafe." They are wasting time and people when they militate against or persecute "unsafe" education. Such governments would be better off to recognize all of education as being potentially revolutionary and to see that when they advocate mass education they potentially advocate overthrow of totalitarianism. Therefore, any government that attempts to make this neat distinction while also claiming to advocate mass or common education, is deluding itself. The potentiality for stimulating revolutionary behavior, so widely feared by totalitarian governments in reference to "unsafe" education, is also present even in primary education or government-sponsored literacy training. Any education, in any meaningful form, is apt to put ideas into people's heads. It is apt to produce an incentive, a searching for, an urging for more opportunity, more grasping, reaching out for more of what that education might mean. Education tends to liberate, to free men and women to see their environment as being to some extent changeable, and to a great degree being in need of change!

The world today shows clearly two examples of common, mass education being recognized as revolutionary. All of education has been harnessed as a revolutionary force to change the social structure in Cuba, and even more successfully, in China. In both cases, education, rather than being the enemy of the government, has been enlisted by the government to be an important agent of change. Education itself was deemed "safe" for the government's purposes and "unsafe" for the status quo. What makes these situations different is that in both cases revolution was the intention of the government rather than the enemy of the government. But when governments are in the hands of socio-economic elite, any threat to the social structure represents a threat to the government. The people who have power are not enthusiastic about seeing themselves lose that power; therefore, they resist anything that is revolutionary.

It will be interesting to watch the progress and effects of massive investments in "safe" education in certain revolution-prone countries. It seems likely that even as a result of efforts to broaden the base of schooling and reach more people with "safe" education (government controlled schooling) there will be social revolution--orderly or disorderly.

In the meanwhile, and much to our anxiety and grief, some of the "unsafe" programs of community development education we have identified as good examples of non-formal education have been gently but firmly taken over by government agencies subsequent to our identifying them. We wonder if we are informers or agents being used against the very people that we thought to help by dramatizing the effectiveness of their work. Some of the non-formal educators we have come to respect have been removed and replaced by government functionaries. We can only wish that the false distinction between "safe" and "unsafe" education could be eliminated and the whole of education be accepted or rejected in terms of its learning effectiveness in the lives of people.

A nagging anxiety about non-formal education, the new king:

For Herod sought to learn of the wise men where the new king was--not so that he could honor him, but so that he might lay hold of him to control him or to strangle him. In his heart Herod feared the new king and the threat to the institutions of the day.

And the wise men were warned in a dream not to return to Herod to tell him where they had found the new king.

And in those days Judea was an underdeveloped nation.

--adapted from an ancient manuscript.

FOOTNOTES: CHAPTER I

[1] Ivan Illich, "The Need for a Cultural Revolution," *Risk,* Vol. VI, No. 4 (1970), 37-38.

[2] Charles E. Silberman, *Crisis in the Classroom* (New York: Random House, 1970).

[3] Illich, "The Need for a Cultural Revolution," p. 39.

[4] Robert James Havinghurst, *Developmental Tasks of Education* (3rd ed.; New York: D. McKay Company, 1972), pp. 14, 15.

[5] Mary Jo Bane and Christopher Jencks, "The Schools and Equal Opportunity," *Saturday Review,* September 16, 1972, p. 41.

[6] Hubert W. Kitchen, "Relationship Between the Value-Orientation of Grade Nine Pupils in Newfoundland and the Characteristics of Their Primary and Secondary Groups" (unpublished Ph.D. Dissertation, University of Alberta, 1966), pp. 1-2.

[7] Edward Wynne, "Education and Socialization: A Complex Equation," *Educational Researcher* (December, 1972), p. 7.

[8] Paulo Freire, "Education for Awareness," *Risk,* Vol. VI, No. 4 (1970), 14.

[9] Jonathan Kozol, *Free Schools* (Boston: Houghton Mifflin Co., 1972), p. 39.

[10] Everett Reimer, *School is Dead: Alternatives in Education* (Garden City, N.Y.: Doubleday and Co., Inc., 1971), pp. 34-35.

[11] *Ibid.*, p. 34.

[12] *Literacy and Family Planning* (New York: World Education, Inc., 1971), p. 3.

[13] It is ironic that many "post colonial" nations fail even to recognize the continuation of this oppressive tradition. They fancy themselves to be free while perpetuating the tyranny of formalized access to opportunity.

[14] Caspar W. Weinberger reported in *Behavioral Sciences*, Newsletter for Research Planning. Kensington, Maryland. The American Institutes for Research. Vol. 10, No. 15 (August 3, 1973), 3.

BEST COPY AVAILABLE

[15] Bernard Wilder, "The Problem of the Education of Illiterates--An Imperative for Non-Formal Education," An unpublished report on education in Ethiopia, 1973, p. 1.

[16] UNESCO Report, "A Statistical Analysis of Out of School Youth in Asia--Trends and Prospects." October, 1972.

[17] Economic Commission for Latin America, Santiago, Chile, as cited by Everett Reimer, *School is Dead: Alternatives in Education*, p. 27.

[18] Jacqueline J. Goodnow, "A Test of Milieu Effects with Some of Piaget's Tasks," *Psychological Monographs*, Vol. 76, No. 36, Whole No. 555 (1962), p. 14.

[19] Patricia Marks Greenfield, "On Culture and Conservation," in *Studies in Cognitive Growth*, edited by Jerome S. Bruner *et al.* (New York: John Wiley and Sons, 1966), p. 234.

[20] Jean Piaget, "Necessite et signification des Recherches Comparatives en Psychologie Genetique," *International Journal of Psychologie*, Vol. 9, No. 1 (1966), p. 4.

[21] Friere, *Risk*, p. 11.

[22] Robert James Havinghurst, *Developmental Tasks of Education* (1st ed.; New York: D. McKay Company, 1972), p. 6.

[23] *Ibid.*, pp. 14, 15.

[24] *Ibid.*

[25] *Literacy and Family Planning*, p. 1.

[26] Jerome Bruner, *Toward a Theory of Instruction* (Cambridge, Mass.: The Belknap Press of Harvard University Press), pp. 14, 15.

[27] W. B. Brookover, Edsel Erickson and Lee Joiner, *Self Concept of Ability and School Achievement III*, Report of Cooperative Research Project 2831, Bureau of Publication Service, East Lansing, Michigan State University, 1967, p. 105.

[28] *Ibid.*, p. 106.

[29] U.S. Department of Health, Education and Welfare, *Equality of Educational Opportunity*, by James S. Coleman (Washington, D.C.: Government Printing Office, 1966), p. 319.

[30] *Ibid.*

BEST COPY AVAILABLE

[31] Wilber B. Brookover and associates, unpublished research presented in class, Michigan State University, November, 1971.

[32] Coleman, *Equality of Educational Opportunity*, pp. 320-321.

[33] Wilburn R. Schrank, "A Further Study of the Labeling Effect of Ability Grouping," *The Journal of Educational Research*, Vol. 63, No. 8 (1970), 3.

[34] Amarjit Singh, "Self-Concept of Ability and School Achievement of Seventh Grade Students in Newfoundland: A Symbolic Interactionist Approach" (unpublished Ph.D. Dissertation, Michigan State University, 1972), pp. 150, 151.

[35] Peter F. Drucker, *The Effective Executive* (New York: Harper and Row, Publishers, 1966).

BIBLIOGRAPHY

Bane, Mary Jo and Christopher Jencks. "The Schools and Equal Opportunity." *Saturday Review*, September 16, 1972, pp. 37-42.

Brookover, W. B., Edsel Erickson and Lee Joiner. *Concept of Ability and School Achievement III*. Report of Cooperative Research Project 2831 Bureau of Publication Service, East Lansing, Michigan State University, 1967.

Brookover, W. B. and associates. Unpublished research presented in class, Michigan State University, November, 1971.

Bruner, Jerome. *Toward a Theory of Instruction*. Cambridge, Mass.: The Belknap Press of Harvard University Press, 1967.

Coleman, James S. *Equality of Educational Opportunity*. Washington, D.C.: Government Printing Office, 1966.

Drucker, Peter F. *The Effective Executive*. New York: Harper and Row, Publishers, 1966.

Freire, Paulo. "Education For Awareness." *Risk*, Vol. VI, No. 4 (1970), 6-17.

Goodnow, Jacqueline J. "A Test of Milieu Effects with Some of Piaget's Tasks." *Psychological Monographs*, Vol. LXXVI, No. 36, Whole No. 555 (1962).

Greenfield, Patricia Marks. "On Culture and Conservation." *Studies in Cognitive Growth*. Edited by Jerome S. Bruner New York: John Wiley and Sons, 1966.

Havinghurst, Robert James. *Developmental Tasks of Education*. 3rd ed. New York: D. McKay Co., 1972.

Illich, Ivan. "The Need for a Cultural Revolution." *Risk*, Vol. VI, No. 4 (1970), 32-42.

Kitchen, Hubert W. "Relationship Between the Value-Orientation of Grade Nine Pupils in Newfoundland and the Characteristics of Their Primary and Secondary Groups." Unpublished Ph.D. Dissertation, University of Alberta, 1966.

Kozol, Jonathan. *Free Schools*. Boston: Houghton Mifflin Co., 1972.

Literacy and Family Planning. 667 Madison Avenue, New York, N.Y. 10021: World Education, Inc., 1971

Piaget, Jean. "Necessite et signification des Recherches Comparatives en Psychologie Genetique." *International Journal of Psychologie,* Vol. 9, No. 1 (1966), pp. 3-13.

Reimer, Everett. *School is Dead: Alternatives in Education.* Garden City, N.Y.: Doubleday and Co., Inc., 1971.

Schrank, Wilburn R. "A Further Study of the Labeling Effect of Ability Grouping." *Journal of Educational Research,* Vol. LXIII, No. 8 (1970), 358-360.

The Schoolboys of Barbiana. *Letter to a Teacher.* Translated by Nora Rossi and Tom Cole. New York: Random House, 1970.

Silberman, Charles E. *Crisis in the Classroom.* New York: Random House, 1970.

Singh, Amarjit. "Self-Concept of Ability and School Achievement of Seventh Grade Students in Newfoundland: A Symbolic Interactionist Approach." Unpublished Ph.D. Dissertation, Michigan State University, 1972.

"The Problem of the Education of Illiterates--An Imperative for Non-Formal Education." An unpublished report on education in Ethiopia (mimeographed).

UNESCO Report. "A Statistical Analysis of Out of School Youth in Asia Trends and Prospects." 1972.

U.S. Department of Health, Education and Welfare. *Equality of Educational Opportunity,* by James S. Coleman. Washington, D.C.: Government Printing Office, 1966.

Weinberger, Caspar W. Reported in *Behavioral Sciences,* Newsletter for Research Planning. Kensington, Maryland. The American Institute for Research, Vol. 10, No. 15 (August 3, 1973).

Wilder, Bernard. "The Problem of the Education of Illiterates--An Imperative for Non-Formal Education." An unpublished report on education in Ethiopia.

Wynne, Edward. "Education and Socialization: A Complex Equation." *Educational Researcher,* Vol. I (December, 1972).

CHAPTER II

PLANNING FOR EFFECTIVE LEARNING IN NON-FORMAL EDUCATION: A LEARNING SYSTEMS APPROACH

Ted Ward
Lois McKinney
John Dettoni
James Emery
Norman Anderson

> I'd have you paid by piecework. So much for each child who learns one subject. Or, even better, a fine for each child who does not learn a subject.
>
> -The Schoolboys of Barbiana. *Letters to a Teacher*, p. 76.

For all of their humanistic motives and their use of emotional arguments, the Schoolboys of Barbiana are inclined to think in "systems" concepts. The use of systems concepts, logic and terminology is rather popular in recent years. Some use the terminology in order to sound "in" on the space-age jargon of science and technology. Others use the logic of systems analysis to rationalize complex social problems that defy conventional modes of thought, and others use the concepts of systems thinking because the world that jolts them seems somehow to be made of good and evil forces that group themselves in clusters, networks, sets, and teams to alternately help and hinder, encourage and discourage, stimulate and frustrate. Today's citizen of the world--even the youth of many lands--appreciate the fact that real problems rarely have simple solutions. Systems concepts have a degree of "fit" with the complex and troubled times.

> Try looking at a lake on any map. It seems to have such a lot of water, but in reality it has exactly the same amount as the stream that fed it. The flow of water has simply slowed down. It loses time while taking up much more space.

> Then at the outlet it begins to run again and we can see that it is the same stream it was before.
>
> The elementary grades are the lake. A boy who is regularly promoted takes up five desks. When he repeats he occupies six, seven, eight . . . .
>
> When you stop flunking pupils, you will in the same stroke solve the problem of crowded classrooms (Schoolboys of Barbiana, p. 39).

The rudiments of a systems view of education are all here: input, processing, and output. The boys use the concept in the way that an educational systems designer does. They think in terms of the ways that the processing procedures interact with the input and thus determine the nature of the output. And the problem of the benefit/cost ratio in the system is seen as inseparable from the processing procedures.

No less than the schoolboys of Barbiana, we are concerned that those who plan and provide educational experiences do so with a basic commitment to creatively involving those they seek to help; effective learning seems intimately bound up in this condition. A systems viewpoint is inherently concerned about what happens to the "input." How many are lost? How could the fit between the needs and characteristics of the input and the "processing" functions be improved? How much of what sorts of changes are seen at the "output" stage? Are these valuable changes? In whose eyes?

> Your "compulsory school" loses 462,000 children per year. This being the case, the only incompetents in the matter of school are you who lose so many and don't go back to find them. Note: we find them in the fields and factories and we know them at close range (Schoolboys of Barbiana, p. 29).

In this third quotation the human-value potentialties of the systems approach to design, planning, and evaluation becomes highly visible. Systems exist; they don't come into being because the planner decrees them. Even as a dam and channel embankments control the waterway against flooding and destroying people, so the systems designer thinks in terms of harnessing the functions of social and institutional systems so that they can help more than hurt. The values in the old system at Barbiana had crushed and destroyed; through their involvement with a sensitive and creative designer, the boys came to experience a new system--wherein more humane values could be realized. The concern for human rights and welfare led to a fundamentally redesigned system in which the boys (the learners) had a share in determining goals and processes.

Concern for Rational Planning in Non-Formal Education

For political and sociological reasons there is anxiety about the increasing emphasis on non-formal education. If non-formal education should become highly visible and dramatized as a "sleeping giant" or "new wave of hope" the results could be unfortunate. Politically, there is a danger that non-formal educational operations might be swallowed up organizationally or forced into bureaucratic molds in order to conform to the requirements for "support" or "coordination." Sociologically, there is a probability that when a formalized sector of society embraces, interlocks, or supports a non-formal sector it will change it, intentionally or unintentionally; such changes would tend toward formalizing and, potentially, away from integrity with aspects of the community that support the non-formal function.

Thus a fear has arisen that consultative recommendations about non-formal education could inadvertently lead to its pollution and decay. Therefore, challenges are raised over each transfusion of a procedure or goal from the formal sector into the non-formal. These challenges are of special concern in the matter of learning effectiveness.

Research on human learning makes no distinction between formal and non-formal settings. Findings are reported as observations and conclusions about learning; and the applications typically refer to conditions of learning of the schooling sort. Thus the study of learning effectiveness in non-formal education must be projected, to some extent possible, from what has been learned in the formal sector, augmented by what has been learned in agricultural extension and communication research.

A preliminary assumption reflects a guarded stance: The factors that lead to effective learning in formal education may not be the same as those that lead to effective learning in non-formal education. A balancing assumption has also been basic to our examination of learning effectiveness in non-formal education: to the extent that the family of man shares in common certain basic needs, and to the extent that the sociological factors underlying all communities give common meaning to the aspirations of man, effective learning will have essentially common cross-cultural characteristics and may result from essentially common factors--whether the setting is formal or non-formal.

These two assumptions lead to a paradox: on the one hand, it is not to be argued that a given instructional procedure or material will lead to effective non-formal learning merely because it is known to do so in certain formal education. But on the other hand, the fact that a procedure or material contributes to effective learning in a given situation suggests the probability that it will similarly contribute to effective learning in another situation--to the degree that the significant variables of learner needs, aspirations, and sociological conditions are similar. Avoiding an inappropriate transfer of ideas from formal education into non-formal education depends heavily on the screening of suggestions--less in terms of their source than in terms of their relevancy to the particular learners and the particular non-formal education setting. (Generalizations are even less feasible than in the formal education sector.)

Special attention to the characteristics of learners, the kinds of human and material instructional resources available, the settings within which the new learning will take on meaning is required in planning for effective learning in non-formal education. Whether this is more true or less true in reference to formal education is beside the point.

When a wide variety of variables is important to a planner or designer, contemporary technology (in any field of natural or social science) suggests a systems approach. The major indication for using a systems approach is concern for the interrelatedness of many and varied factors within a pattern or unified whole. Programs of non-formal education are always of this sort; such a program is expected to provide a specified set of services or resources to a specified group of people in order to achieve specified learning outcomes. Further, the social context which structures the needs and aspirations of the learners will interact with the learners and, in turn, be affected by the learners.

It is assumed that all instructional experiences (beyond the most informal of the societal influences that contribute to human development) spring from some sort of plan, design, or intention--no matter how casual, partial, or sub-conscious. From this assumption it follows that the degree of learning effectiveness resulting from a given instructional experience can be considered a measure of the quality of the plan, design or intention. Improving learning effectiveness requires improvement of the instructional plan. In this sense, planning is no more associated with formal education than with non-formal education.*

Why SYSTEMS Planning?

Systems approaches to anything imply technology; and "systems for education," "instructional systems," and "learning systems" are terms strongly associated with the technology movement within formal education during the 1960's. If one assumes that the technology movement has, in fact, been influential in reshaping formal education, then a question can be raised about the possibly inappropriate transfusion of the systems approach from the formal to the non-formal education sector. But a close look reveals that the assumption is unfounded. Oettinger contends:

---

*Note the distinction between instructional planning as used in this monograph and educational planning or national planning for education, etc., as commonly used by "educational planners." The emphasis in this chapter is on the design of effective learning experiences, rather than on techno-economic systems.

BEST COPY AVAILABLE

> The present tools of formal systems analysis work best on well-defined, simple, concrete models involving quantifiable concepts, measurable data, and, above all, thoroughly understood theoretical structures which adequately reflect reality (Oettinger, 1969, p. 65).

This description excludes most if not all of formal education as it is known today--if for no other reason than its typical web of unspecified intended outcomes. Why does formal education exist? To "educate," a virtually hopeless purpose to bring under systems planning. Why does non-formal education exist? Program by program, non-formal education exists in order to make it possible for people to be changed in certain specific ways, adding or improving given skills or competencies. Thus, non-formal education constitutes a much more appropriate framework in which to make use of a systems approach to planning.

To some extent formal education in the United States has been resistant to educational technology. In recent years--since the upsurge of instructional systems technology--it has become popular to attack educational technology from a humanistic stance. Rejection of the concept of school as a learning factory, with all its pejorative and metaphoric implication, is becoming a respectable stance: (one might suspect that it is, for some, a cheap stance, similar to being against sin and in favor of the welfare of mankind). Rejecting even the words teaching _machines_, instructional _systems_, _computer_-assisted instruction, delivery systems, and the like, is increasingly popular--in the name of humanity and concern for the affective aspects of learning. Underneath there is a profound issue: comprehensive education, as it has developed in the western world and as it is epitomized by the American ideal of the school for all the people has too willingly accepted the whole burden of the socialization process. (Whether or not it fulfills its innocent promises is of no concern in the idealized imagery.) In contrast to the amorphous educational-totality view of schooling is any view of learning that defines precise outcomes. For example, a view of schooling as a total process of development of the competent citizen is at odds with educational evaluation that assesses and compares arithmetic test scores from school to school and from state to state. On one side of the controversy are those who contend that the gestalt of educational development is larger than any of the bits of measurable gain and that a preoccupation with the bits can obscure the bigger issues; on the other side are those who maintain that the issues, crucial or trivial, are real only if they are manageable--and that management begins with definition and specification.

The twin foundation-stones of the educational technologist are "precisely" defined objectives and "precisely" measured learning outcomes. After nearly fifteen years of technological nudges at the established formal education structure, it is becoming more clear why the teaching machines sit on the closet shelf. It is now reasonable to reflect that educational technology isn't warmly accepted by the formal education structure--much less can it be considered a legitimate child of western traditions of formal education. Oettinger concludes:

> The formal educational system is bound to society in a way that is almost ideally designed to thwart change. Little substantive change is therefore to be expected in the next decade (Oettinger, p. 215).

Herein lies an amusing irony: the arguments for measurable outcomes are now the province of "modernizer." Such strong emphasis on the content of learning (inherent in the technological approach) was formerly the hallmark of the traditionalist!

The increased focus on non-formal education has revealed a high degree of content emphasis. The old-fashioned school is not unique as a vestige of content-emphasis; non-formal education is full of emphasis on content. In non-formal education learners typically know why they are there, what they expect the experience to do for them, and what they intend to do with the learning. Further, in non-formal education--especially where people are free to walk out of an unsatisfactory experience--there is an internalization of the criteria of effectiveness of learning that can and will be acted on. The internalization becomes expectation; expectation builds toward motivation and motivation becomes a basis for evaluation within the learner. In non-formal education the learner usually has ways and means of acting upon his evaluations of the experience. Formal education has little of this pressure upon it; thus content focus and technologies based on the "defined objectives" concept are less apt to take hold in formal education than in non-formal education.*

Perhaps the specificity and clarity of purposes and learning objectives in non-formal education makes it more likely that technology will relate appropriately and be accepted as a partner in the educational process. Thus systems planning of instruction may become a basic procedure in non-formal education.

Basic Assumptions about Non-Formal Education

"Non-formal" relates more to the motives of education than to the modes of education. From place to place "non-formal" education uses virtually the whole range of instructional procedures used in formal education. To a lesser degree, "non-formal" relates to who is sponsoring the education. When education is carried out by the organizations or agencies that are already established or recognized as "educational" (for example, the Ministry of Education or a university), it is usually assumed that the education is "formal." When the education is carried out by organizations or agencies that are not primarily committed to the operation of educational institutions, the efforts are said to be "non-formal" education.

But a distinction based on these factors is most unfortunate. Procedures used in non-formal education are no less apt to be pedantic, restrictive and rigid merely because they are sponsored by an agency not ordinarily identified in education. Further, it does no justice to the important procedural innovations being used by educational establishments to label them as being "formal" with no regard for their non-formal instructional modes. Some of the most important innovations in education during this century have come through the experimentation that formal institutions have done in developing truly non-formal modes of education. The significant expansion of cooperative extension services (as in rural and community-life education in the U.S.), adult education in many parts of the world, "radio classes" (as in Australia, Colombia, India, and Italy) and other expansions of the efforts of ministries of education to broaden public education through mass media of communication are contributions of the "formal education" sector to the development of non-formal modes. Thus the arbitrary distinction between formal and non-formal education is unfortunate when it results in a diversion of attention from the central issue of effective learning.

---

*Conflicts arising from concepts of evaluation as a concern for specific learning increments versus a concern for broad generalizations about human development and social competence are also apparent in the arguments for and against the National Assessment of Educational Progress in the United States.

Perhaps today the sides are drawn, as if to battle, because of the charges of ineffectiveness and inefficiency against the establishments of formal education. Such unfortunate polarization of "good guys" and "bad guys," after the style of inferior movies, tends to obscure the more vital issues. The most important need today is for effective learning--reagrdless of the sponsorship of the educational operation and regardless of the label "formal" or "non-formal" that may be attached to it.

Probably there is little inherent difference between effective learning in non-formal situations and effective learning in formal situations. In contrast with both formal and non-formal learning, informal learning is most apt to be different, since informal learning is likely to be "unconscious" in the sense of incidental and non-intentional (so far as the learner is concerned). For example, the learning of one's mother tongue is mostly gained through informal learning situations. For the infant in the family and a child in the neighborhood, informal learning begins long before the day that formal or non-formal education begins.

Occasionally we need to be reminded that schools do not make people learn. Schools may help people learn; certainly schools can provide opportunities to learn; and schools can even help people become more interested in learning. But schools in general are but one way to bring people into contact with educational resources. Whether or not the poeple learn and what may be the value of what they learn are issues sometimes overlooked. It is not enough to *build schools. It is not enough to provide teachers.* Assuring effective learning demands that ends and means (goals and procedures) must be aligned with significant values of the society (See Figure 1).

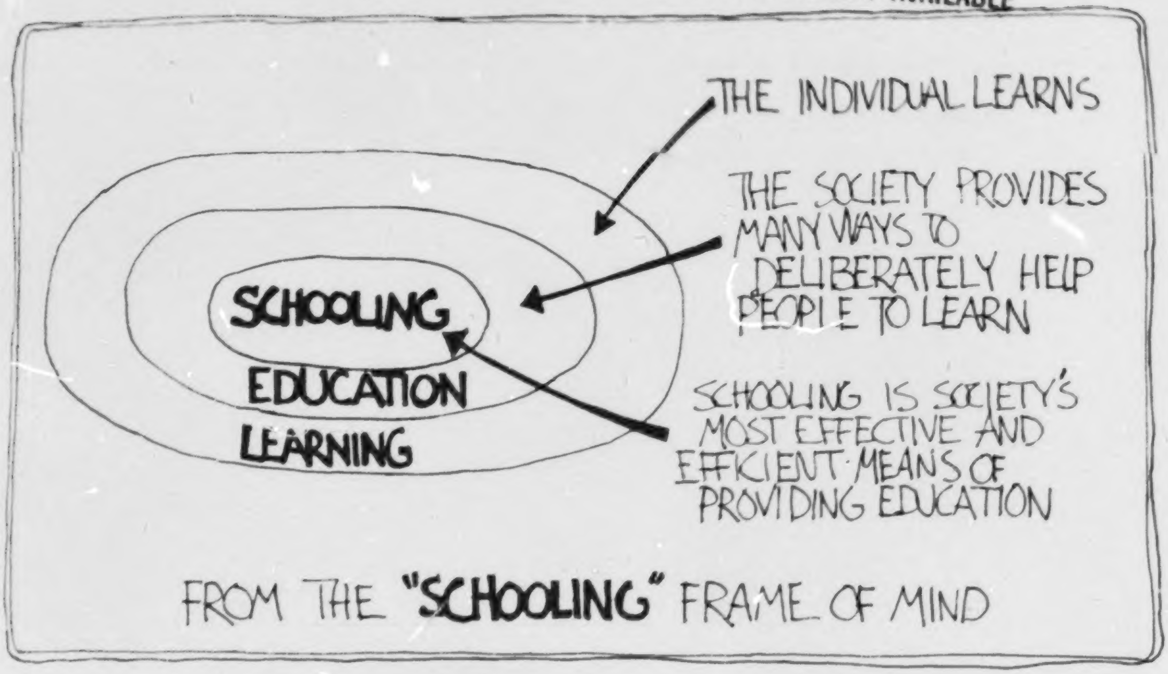
Effective learning depends on: (1) relevancy of the educational goals to social values, (2) accommodation of the learning characteristics of learners, and (3) accommodation of the pedagogical expectations of the learners. Thus those who are concerned about effective learning (whether the educational setting is formal or non-formal) must evaluate the relevancy of the educational experiences to social values. They must also be careful to select materials, procedures and methods that are appropriate to the characteristics, goals and expectations of the learners.

Whether or not the current wave of interest in non-formal education is a fad is a legitimate question. Education in the twentieth century has manifested the volatility and instability, as have most other social institutions. The advent of the communications revolution has aggravated the already unstable situation: the pendulum swinging from one extreme of philosophy and methodology to another is now accelerated, but shows no new signs of coming to a definite rest position. Thus the newly dramatized term "non-formal" may add little clarity to an already confused situation. If we are engaged in one more semantic exercise or one more attempt to find utopia by putting new labels on the status quo, then the excitement about non-formal education is indeed a fad.

Alternatives!

Our experiences with those who are seriously concerned about non-formal education leads us to the conclusion that the phenomenon is neither trite nor futile. But the term "non-formal education" leaves out the key word alternatives. Those who are seriously interested in non-formal education usually express their concerns in terms of needs

BEST COPY AVAILABLE


THE INDIVIDUAL LEARNS
THE SOCIETY PROVIDES MANY WAYS TO DELIBERATELY HELP PEOPLE TO LEARN
SCHOOLING
EDUCATION
LEARNING
SCHOOLING IS SOCIETY'S MOST EFFECTIVE AND EFFICIENT MEANS OF PROVIDING EDUCATION
FROM THE "SCHOOLING" FRAME OF MIND

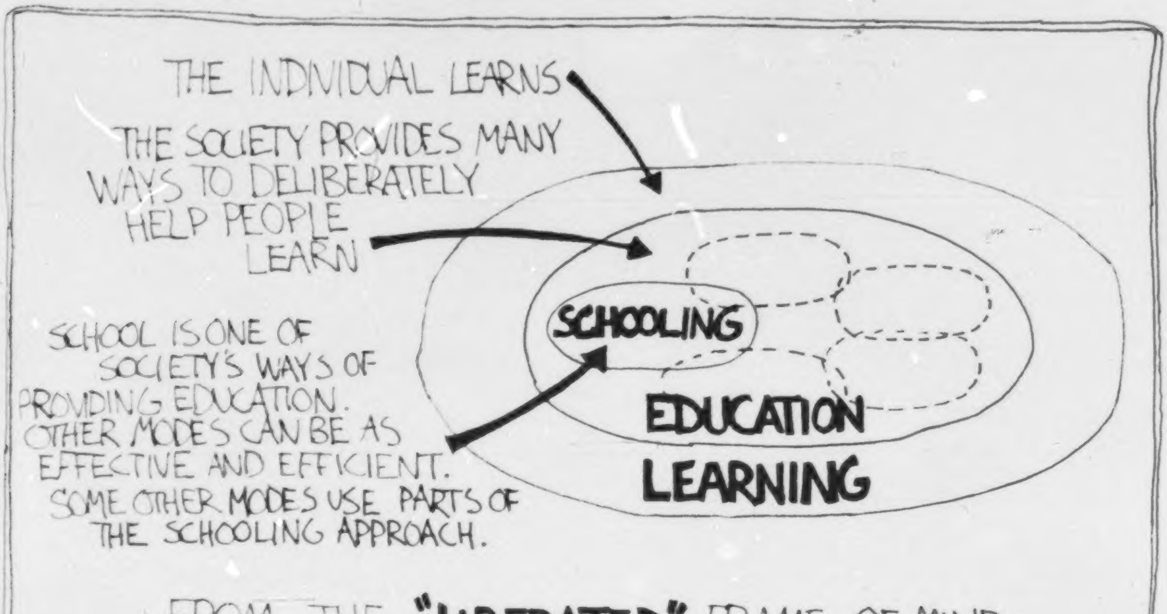

THE INDIVIDUAL LEARNS
THE SOCIETY PROVIDES MANY WAYS TO DELIBERATELY HELP PEOPLE LEARN
SCHOOL IS ONE OF SOCIETY'S WAYS OF PROVIDING EDUCATION. OTHER MODES CAN BE AS EFFECTIVE AND EFFICIENT. SOME OTHER MODES USE PARTS OF THE SCHOOLING APPROACH.
SCHOOLING
EDUCATION
LEARNING
FROM THE "LIBERATED" FRAME OF MIND

Figure 1.--Defining Learning and Schooling.

for alternatives to otherwise overly-costly or unresponsive and anachronistic formal systems of education. Thus the issue is rarely the degree of formalness of the educational operation, but its costs and its performance in terms of reaching objectives.

"Non-formal education" is a rather non-descriptive collective term thrown over anything and everything in which people who seek educational alternatives might be interested. Thus the technologies of formal education may be employed in non-formal education--to the extent that they can be used to reach different objectives and reach them at lower costs.

Many people most clearly identified with the search for non-formal alternatives in education are "angry" people. Some are frustrated over the tendency of formal education to enrich and perpetuate elitism and meritocracy within their societies. It is charged that such educational systems do little or nothing to solve the problems of massive ignorance, poverty and isolation from the determination of governing authority and human destiny in general. Others have more specific criticisms of weaknesses of the "establishment" that they would attempt to relieve through alternative ways and means in education. Thus, the reformers who object to the alleged depersonalization and irrelevancy of American education find themselves in company with the educational revolutionaries of South America, Africa, and Asia whose major concerns are substantially different. The kinship of reformers and revolutionaries derives primarily from the fact that they are all seeking alternatives--for somewhat different reasons, toward somewhat different objectives, and using essentially different means.

Malcontented persons from many different countries, representing various degrees of urbanization and modernization, identify with one another in terms of their quests for alternatives to the contemporary western-style institutionalized education. This fact constitutes one of the stronger replies to the charge of faddism. "Non-formal education" may be a faddish label, but the earnest quest for

BEST COPY AVAILABLE

lower cost alternatives to substitute for classical educational procedures and resources is substantial.

In summary, the need for effective non-formal education is usually expressed as a need to find alternatives: the alternatives are needed because of one or more of the following motives:

1. To bring education to people who are not being reached by the formal educational establishment,
2. To provide education at lower cost, or
3. To direct educational efforts toward goals that are more practical or more closely related to the learners' needs within their society.

Increased Learning Effectiveness Through Systems Development

The frontiers of research in human learning are concerned less with the science of the brain than with the understanding of learners and environments for learning. The mysteries of mental processes remain stubborn, but improving the technology of instruction does not depend on understanding how the brain works. Further, as typically used in reference to non-formal education, "effectiveness of learning" relates primarily to pragmatic issues. Important steps forward have been made possible by combining the procedures of system analysis with refined insights into learners and environments of learning.

In most simple form, a systems model of an educational operation accounts for three elements or factors: input, processing and output.

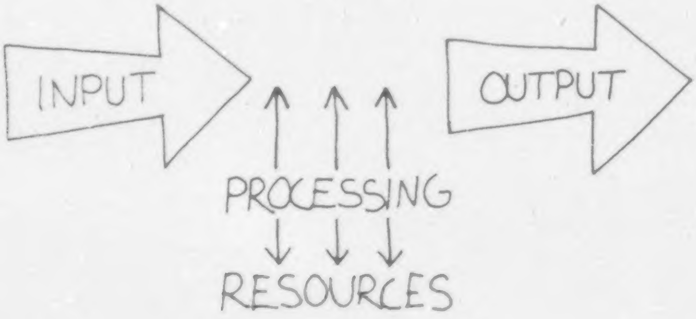


Figure 2.--Rudimentary Systems Model.

BEST COPY AVAILABLE

Input is what goes into the system to be processed. Processing is the series of experiences through which the input is modified. Output is what comes out of the system; in essence, output is changed input, reflecting the changes that the processing has brought about.[*]

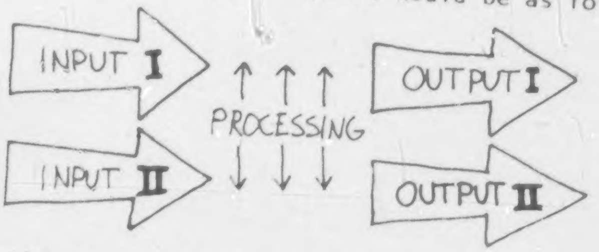
From a learning viewpoing, input is people (learners) and output is people. Output is learners who are changed, having learned whatever learning is that the processing functions produce.

With these three simple elements we can begin to use the systems concept. We can visualize, and thus conceptualize more specifically the following important questions:

1. What is the intended difference between the output and the input?
2. Is it reasonable to expect the particular processes to produce the specified outputs?
3. Is it reasonable to expect these processes to function well, considering the realities of this particular input?
4. What parts of the processing are superfluous, wasteful or counter-productive?
5. In what way does the input help to shape the processing? Are input values being adequately utilized and taken into consideration?

---

[*] Some systems analysts think of input as including the resources that are utilized as elements in the processing operations. A rudimentary model for such a viewpoint would be as follows:



In this model, the inputs to the processing system and the non-learning outcomes are made explicit and are given designation "II." We have no objection to this model, but feel that the simpler model is adequate.

BEST COPY AVAILABLE

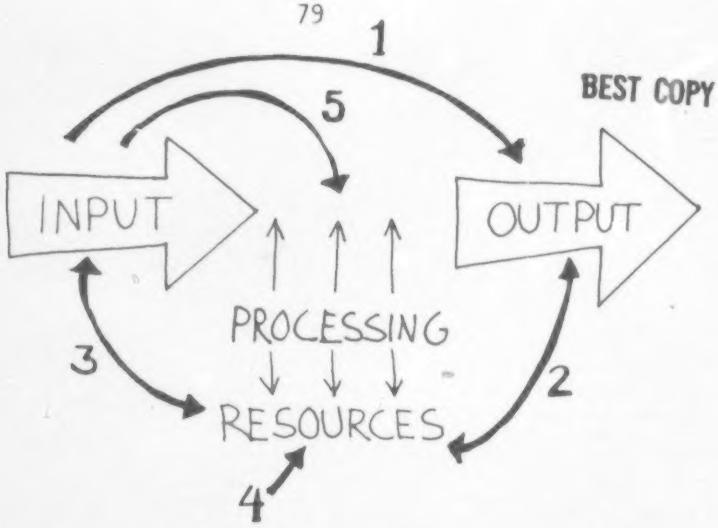


Figure 3.--The Focus of Five Key Questions.

Typically, the instructional designer who wishes to use a systems approach begins by studying a variety of approaches to conceptualization and diagramming as revealed in a wide variety of sources.* The next step, of course, is to conceptualize and create visualizations of the learning tasks and delivery systems that are being planned, beginning with rudimentary or elemental models and then progressing up through more complex views of the many components,

---

*The sources are many. As a starting point for systems concepts, we suggest *Systematic Thinking about Education* by Alice H. Hayden and Gerald M. Torkelson (Fastback #17), 1973, Phi Delta Kappa, Eighth and Union Box 789, Bloomington, Indiana 47401 (50¢, less in quantity). For more advanced study and examples of diagramming of systems concepts in educational design, *Instructional Systems* (The Educational Technology Review Series), Educational Technology Publication, 140 Sylvan Avenue, Englewood Cliffs, N.J. 07632. We identify these two sources as dealing with formal education in such a way as to provide for easy transfer of their ideas into non-formal education. For an actual application of systems design to cross-cultural and non-formal educational problems, the following is valuable: *Educational Technology--The Design and Implementation of Learning Systems*, Organization for Economic Co-operation and Development, 2 rue Andre-Pascal, Paris XVI^{e} 1971. More extension studies are possible through S.G. Tickton's anthology, *To Improve Learning: An Evaluation of Instructional Technology*, Vols. I & II, New York: R. R. Bowker, 1970.

sub-systems and environmental conditions that impinge upon the proposed learning system. Figure 4 suggests the sort of rudimentary starting point that might be used in conceptualizing the various linear relationships that would be conceptualized by a western-style designer of an instructional system.

A more complex view of the whole setting within which the learning takes place--and, by the way, a more non-western sort of conceptualization of a learning system is suggested by Figure 5.

The typical instructional design task in non-formal education can be seen as a series of ten problems. In the pages following, this set of problems is described and treated as a series of discussions, hopefully alerting the designer of non-formal education to the array of issues and concerns that a systems view of the task can highlight. The ten problems are not strictly required in real life. The designer will need to assume that many of the suggested operations will be conducted simultaneously and that the interaction and recycling among several of the activities represented on the block design are both inevitable and desirable. An initial visualization of the discussion is provided in Figure 6.

Problem I: Specify the Learning to be Achieved

Non-formal education is typically concerned with learning that has a high degree of "practical" usefulness. Thus the specifications of learning, as indicated in a systems development procedure, would be especially concerned with the learning in exactly the form it will be most likely applied. For example, assume that the practical problem for which the non-formal education is being designed is the need for operators of tractors for community farms. The training program should specify learnings as operational skills of tractor operation and tractor maintenance. The learning would be specified in terms of its practical use, not in terms of abstract or theoretical understandings. In another illustration, the learning objectives for a family planning program would not be specified as

BEST COPY AVAILABLE

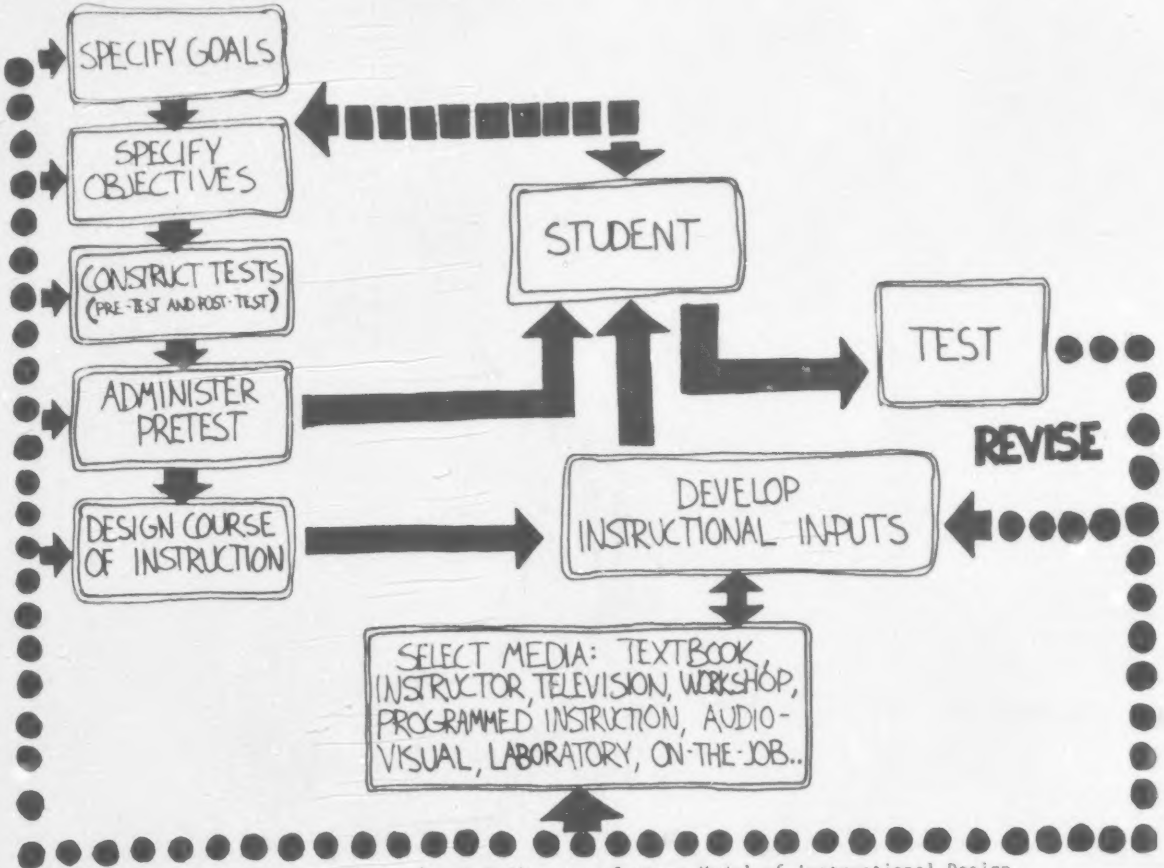

SPECIFY GOALS
SPECIFY OBJECTIVES
CONSTRUCT TESTS (PRE-TEST AND POST-TEST)
ADMINISTER PRETEST
DESIGN COURSE OF INSTRUCTION
STUDENT
TEST
REVISE
DEVELOP INSTRUCTIONAL INPUTS
SELECT MEDIA: TEXTBOOK, INSTRUCTOR, TELEVISION, WORKSHOP, PROGRAMMED INSTRUCTION, AUDIO-VISUAL, LABORATORY, ON-THE-JOB..

Figure 4.--A Rudimentary Systems Model of Instructional Design.

-ADAPTED FROM-
JOHN E. DOME
MIAMI UNIVERSITY
OXFORD, OHIO

BEST COPY AVAILABLE

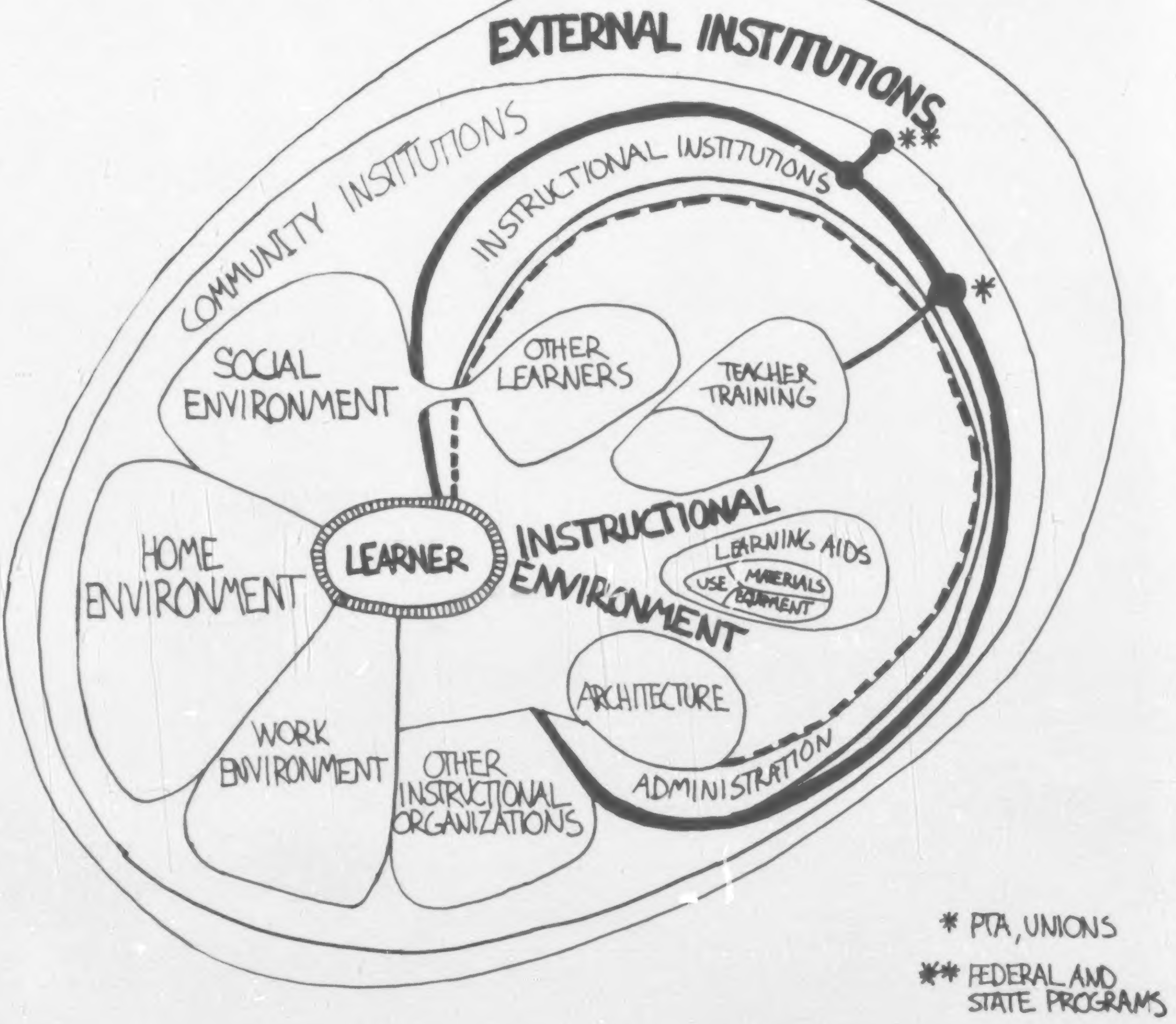

EXTERNAL INSTITUTIONS
**
COMMUNITY INSTITUTIONS
INSTRUCTIONAL INSTITUTIONS
*
SOCIAL ENVIRONMENT
OTHER LEARNERS
TEACHER TRAINING
HOME ENVIRONMENT
LEARNER
INSTRUCTIONAL ENVIRONMENT
LEARNING AIDS
USE
MATERIALS
EQUIPMENT
ARCHITECTURE
WORK ENVIRONMENT
OTHER INSTRUCTIONAL ORGANIZATIONS
ADMINISTRATION
* PTA, UNIONS
** FEDERAL AND STATE PROGRAMS

Figure 5.--Conceptual Model of a Learning System (Randall, n.d.).

BEST COPY AVAILABLE

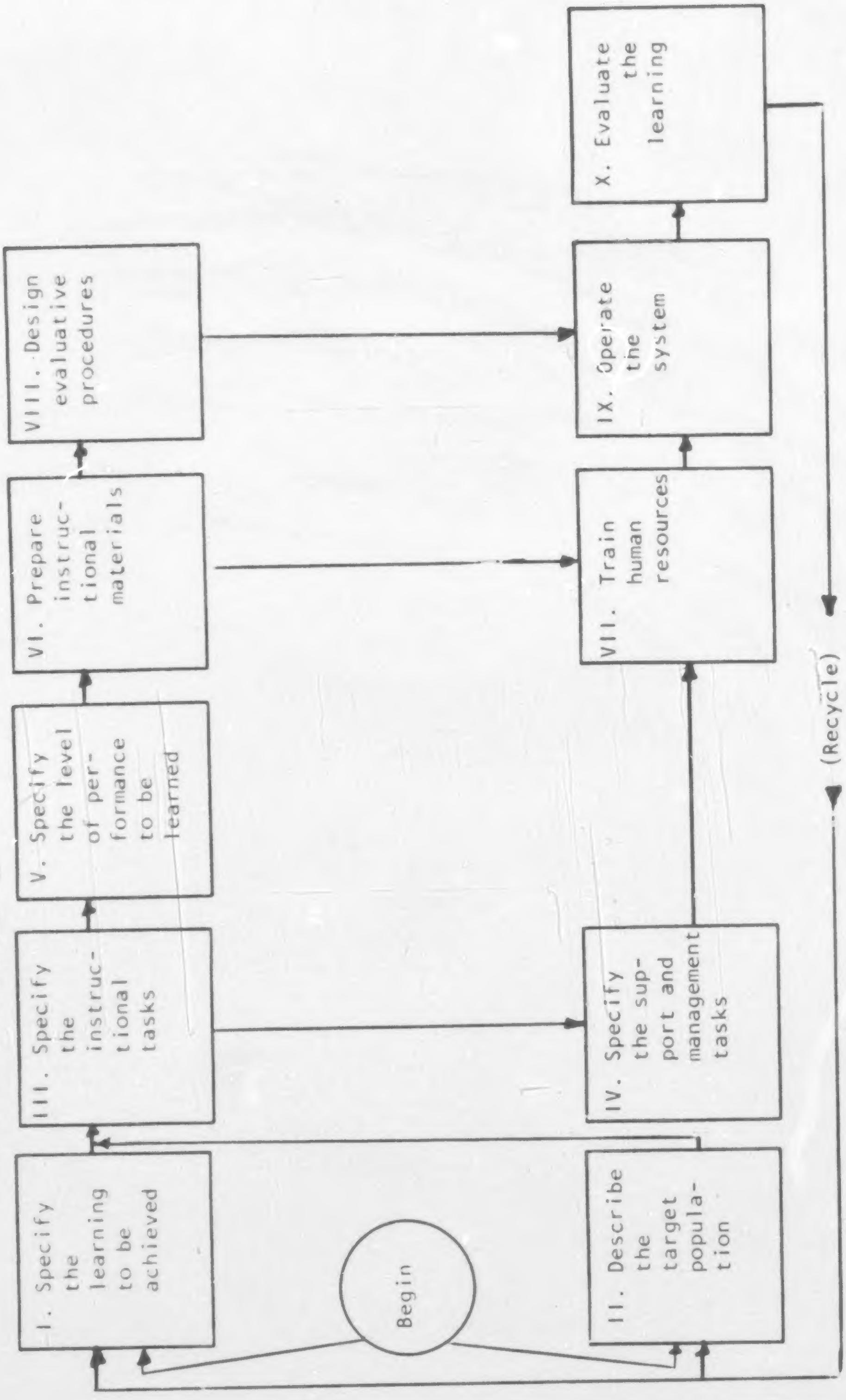

Begin
I. Specify the learning to be achieved
II. Describe the target population
III. Specify the instructional tasks
IV. Specify the support and management tasks
V. Specify the level of performance to be learned
VI. Prepare instructional materials
VII. Train human resources
VIII. Design evaluative procedures
IX. Operate the system
X. Evaluate the learning
(Recycle)

Figure 6.--A Systems Model for Planning Non-Formal Education.

understandings or as "knowing about birth control techniques," but as the composite of understandings and behavior changes that represent the actual adoption and practice of family planning procedures.

The emphasis on practical and behavioral learning achievements is not only a concern of non-formal education. Formal education, in some countries, has undergone a similar shift in emphasis toward behavioral objectives in the past few years. But still, it is in non-formal education that the investments in education or training are expected to achieve very specific goals based on very pragmatic sorts of values.

Problem II: Describe the Target Population

The target populations for programs of non-formal education are usually rather specific and delimited. It is within formal education that the education-for-everyone approach has been most often applied. Indeed one of the continuing dilemmas of formal education is the need to provide educational experiences for a diverse population. If target populations are not carefully defined, the educational experiences that are designed may prove to be appropriate for only some small segment of the target population. A current criticism of American education is that in its effort to provide one set of experiences for a widely varied target population it fails to provide appropriate experiences for those whose pre-school environmental background has been atypical.

One of the most important requirements for effective learning is a matching or interlocking of the planned experiences and the learners. Each proposed target population must be carefully studied and understood in terms of three major factors that vitally relate to effective learning: (1) the motivations, value systems and reward systems within which learners live and work, (2) their cognitive style and capabilities in terms of previously acquired skills, and (3) their expectations about learning and about the pedagogical environment.

It is the position held in this paper that precise description of the target population is absolutely essential for successful application of the systems development procedure for instructional planning. Since we feel that this problem is sometimes overlooked or minimized by those who plan non-formal education, a detailed plan for specifying a target population is presented later in the paper.

Problem III: Specify the Instructional Tasks

Jerome Bruner (1967) was among the first of the psychologists of learning to warn that teaching and learning are not two sides of the same coin. Identification and description of learning objectives is only one step; after the intended learning is specified it remains as a separate task to propose the sort of instructional experiences that would achieve the learning. Regardless of the apparent "scientific" or technological approach to instructional systems design suggested by the "block diagrams" and "flow charts," instructional design is a creative task. With data about the target population in one hand and the learning objectives in the other hand, a creative designer or team of designers is ready to sit down to think through the many different ways that learning experiences could be provided. The success of this step depends heavily on the degree to which the instructional designers observe the data on the target populations and the specified objectives. But there are also two other highly important factors: (1) awareness of the full range of possible instructional alternatives and (2) insights into the relevancy of the instructional alternatives to the cultural influences on the personalities of the target populations.

Specifying instructional alternatives consists of (1) identifying and/or creating (at least describing) the possible instructional procedures that promise to achieve the learning objectives, and (2) making choices among the alternatives in order to move ahead in the development of the instructional system. (It is important to recycle an instructional system in order to revise the instructional procedures--sometimes even to make other selections from among the alternatives--in order to improve the system on the basis of the data from the early evaluations.)

Problem IV: Specify the Support and Management Tasks.

As soon as the first decisions about instructional tasks are made, the support tasks can be defined. For example, if it is determined that the instructional tasks are to be performed through the medium of television, the support tasks can be defined--even before the instructional materials ("software") are developed. The support tasks for an instructional system ordinarily involve the system "hardware" and its maintenance. Non-formal education typically goes one of two directions: (1) uses existing resources ("hardware") and puts the new instruction through these channels with minor modifications; or (2) develops new resources to use as instructional channels. Generally the first option is elected when the system is to be very widely disseminated; the second option is used if the system is to be more precisely focused on smaller (but perhaps widely scattered) target populations. For the first alternative, then, the specification of support tasks involves negotiations and joint planning with other agencies whose resources the instructional system will share, such as radio or television. For the second alternative, the efforts are apt to be more heavily invested in preparing the support system personnel, often necessarily recruited and organized as an altogether new team. In any case, the design of an effective management procedure must begin at this point.

Problem V: Specify the Level of Performance to be Learned

The effectiveness of systems development rests less on its "scientific" nature than on its careful organization of the sequences and scope of decisions which must be made. In designing an instructional system for effective learning, it is usually advisable to make a separate step for the specifying of the level of performance to be learned. There is a difference between the learning task itself and the level of performance. The level of performance is concerned with accuracy, rate of performance, or quality level of the skill. For example, in the tractor-operation example used earlier, after it is determined what the learning task is and how it will be taught, the question remains, what level of competency will the system attempt to achieve? Since a systems approach to instruction usually anticipates "mastery learning" rather than a distribution of accomplishments on a "normal curve," the important issue to be determined in this step is what will constitute the lowest acceptable level of performance for any learner. For example, the system might specify a 100% frequency for learning to "check the oil level before starting the engine," but be satisfied with 60% frequency of performance of the learning "shut off the fuel line before leaving the tractor at the end of the day." In matters of quality, the straightness of plowed rows might be judged to be very important or not very important. Since the next step (preparing instructional materials) must take account of these judgments about importance, frequency and quality, the specification of the levels of performance to be learned should be made before the actual design of the instructional materials. Especially in learning experiences built on the "mastery" model, it must not be assumed that all learners are to learn every skill to a perfect level of performance 100% of the time. The "mastery" model instead very deliberately defines mastery, establishing a set of standards that represent the acceptable level of achievement of the skills or understandings. Then a set of procedures is designed whereby all appropriate learners will attain these levels.

Problem VI: Prepare Instructional Materials

The preparation of instructional materials is a set of tasks guided by the decisions made earlier in the specification of instructional objectives and in the specification of level of performance to be learned. Nevertheless, there must be a high degree of imagination and creativity applied to this problem. As indicated in the section on Problem III, designing instruction is a creative task in which a designer or a design team sets up a variety of possibilities and selects those that seem most promising.

Revising or adapting instructional materials that were designed for one purpose in order to make them useful for another purpose is difficult at best, hazardous at worst.

Fortunately, it is common in programs of non-formal education to develop special new instructional materials. It is often very hard to adapt instructional materials that were designed for use in formal education. (The difficulties include linguistic demands, conceptual level, degree of abstraction, and basic differences in learning objectives.) Thus it may be more satisfactory to develop new materials than to attempt to adopt or revise existing instructional materials.

Now that non-formal education has become a matter of worldwide interest, there is an additional hazard: inappropriate use of instructional materials that have originated in another culture (Howieson *et al.*, 1968). Particularly from the research on programmed instruction has come evidence that instructional specialized print media (particularly those that use the various forms of programmed instruction), and the visualized media (motion pictures and television), there must be an attunement between the instructional materials and two sets of factors within the culture: the cognitive style and the pedagogical expectations of the learners. Instructional procedures in general, and especially the materials for given procedures must be designed in such a way as to relate to the cognitive characteristics of learners: even within one culture, differences in learning style should be accommodated to increase the effectiveness of the learning; but across cultures, where differences of cognitive characteristics may be large, it is especially important that appropriate transformation of instructional materials be made. Until recently it has been common for educators to make generalizations and to overlook cognitive differences. But it is becoming more widely understood that learning style is important and that even within limited geographic areas and among people of similar ethnological backgrounds differences in cognitive characteristics can be very significant. For example, Hovey (1971) points out evidences of a wide range of cognitive styles within twelve societies of East Africa. These differences in cognitive style suggest that very different procedures would be necessary in order to provide effective learning.

Problem VII: Train Human Resources

The people who will operate (manage or deliver) the major instructional experiences as well as the people who will operate the support systems must be trained. Although they need not be trained together, it is necessary for the training programs to be articulated or even overlapped in order to assure that the various human roles will be compatible and supportive. In a thorough system design, the training programs for delivery system personnel and for the support system personnel are planned as thoroughly and precisely as is the main delivery system. Thus what is recommended here is a system--in which the personnel are analyzed as target populations, the needed skills are specified and the instructional tasks and materials for personnel training are specially designed. The value of field-trained manpower--especially para-professional or technicial level workers rather than college-trained teachers is dramatized by the successor of the INNOTECH "programmed teaching" projects in Southeast Asia (Ellson, 1973).

Problem VIII: Design Evaluative Procedures

Inasmuch as the success or failure of an instructional system usually depends on its ability to gather evaluative data and to re-cycle its design and operation (make changes for improvement), the plans for evaluation must be completed before operating the system. The design for evaluation of the effectiveness of the system must be very thorough. In a systems approach to "mastery" learning, the evaluation procedures are based on assessing the strengths and weaknesses of the system in terms of reaching its specified objectives. Evaluation in formal education is more often concerned with the accomplishments of the students; whether a student "passes" or "fails" is thought to be a consequence of his having "applied himself" and having "worked hard." In terms of the "mastery learning" approach, it is the instructional system (including the input screening processes) that is under test. Thus, the evaluative procedures must include data collection (testing) at the beginning and at several points during the learner's progress through the stages of the instructional procedures; it is important to be able to identify the exact breakdown points or weaknesses in the system for learners of given characteristics.

Problem IX: Operate the System

This problem is self-explanatory, except for the fact that in a systems approach to instruction the operation of a system, especially at the first, is a sort of trial or experiment. In the early months of the operation of a given delivery system of non-formal education, the major objective of the operation is to gather evaluative data. Thus many well-designed instructional systems begin their operational phase on a small scale, even operating under the constraints of field trials in given test-sites where the characteristics of the environment and the learners are well known. It is important that these test-sites be carefully selected for their equivalence to the broader populations for whom the system has been designed.

Problem X: Evaluate the Learning

The primary purpose of evaluating is to get information that can be used to recycle the system. Recycling refers to making changes (adjustments, alterations, corrections) in the instructional system in order to increase the effectiveness of the learning resulting from the system. In a "mastery" approach, evaluation also is used to recycle the learner until his learned performance is able to meet the level of performance specified as mastery of the learning. Especially in well-planned non-formal education, testing is highly behavioral and

BEST COPY AVAILABLE

task oriented, in keeping with the learning specified by the system. For example, in the tractor-operation illustration, the testing program is likely not to use written examination, but would rely heavily on evaluative observations of performance. The best of such tests use unobtrusive measures to gather data rather than making the learner conscious of being evaluated.

Basic Questions for Planning

In simplest terms learning can occur when a learner (L) comes into educative experiences (Ex_{ed}):

$$Ex_{ed} \longrightarrow L = \text{Learning} \qquad L \longrightarrow Ex_{ed} = \text{Learning}$$

But learning is almost always a complex transaction. No simple model of learning is adequate for purposes of instructional design. The planned educational experiences are but one part of a more complex universe of experiences in which the learner himself is a contributing part. Further, the learning results from the transaction of the deliberate educative experiences (Ex_{ded}) the universe of environmental influences ΣIn_{en} and the learner as a unique personality Lp_1.

$$\begin{tikzcd}
Ex_{ded} \arrow[dd, leftrightarrow] \arrow[dr, leftrightarrow] & \\
& Lp_1 = \text{Learning} \\
\Sigma In_{en} \arrow[ur, leftrightarrow] &
\end{tikzcd}$$

Identifying all of the significant variables within the model of learning is obviously impossible. Thus it is necessary to decide which factors are the most important and to plan well for their development.

What questions about the target population do instructional designers need to answer in order to plan non-formal educational ventures that are alternative, less costly and effective? Following is a suggested procedure for identifying the ethno-pedagogical issues most basic to the problems of designing for effective learning.

Designing effective non-formal education involves consideration of motivations, expectations, and abilities of learners and the rewards and reward systems in which the learners and the learning experiences operate.

		Sociological	Psychological
What brings a person to the learning experience?	motivations	conformity societal norms enforcement requirement	curiosity anxiety ambition anticipation of rewards
What will he get from the experience?	rewards	prestige recognition status income power	self-fulfillment gratification
What does he hope or believe the experience will be?	expectations (pedagogical, topical, values)	teacher: roles content utility	abstract/concrete
What is he able to do and what is he capable of learning to do? (i.e., what are the constraints of learning?)	abilities	role acceptance	mental ability cognitive style affective involvement

The first set of questions below concern motivations of learners.

1. a. What motivations will exist?
   b. Which of the extant motivations are appropriate to (consistent, in harmony with) the educational goals?
   c. How can these be enhanced, emphasized, dramatized?

2. a. What are other motivations that would be consistent with the educational goals?

   b. Which of these are worth inducing (creating, establishing)?

   c. How can they be induced?

3. a. Which of the extant motivations are inconsistent with the educational goals? (revealed by negative data from 'b)

   b. Which of these would it be worthwhile to suppress or eliminate?

   c. How can they be eliminated?

The second series of questions concerns rewards.

4. a. What rewards (reward systems) exist in the personal-social-occupational environment of the learners?

   b. Which of the extant rewards are appropriate to (consistent, in harmony with) the educational goals?

   c. How can these be enhanced (emphasized, dramatized)?

5. a. What are other rewards that would be consistent with the educational goals?

   b. Which of these are worth inducing (creating, establishing)?

   c. How can they be induced?

6. a. Which of the extant rewards are inconsistent with the educational goals? (See negative data from 4b.)

   b. Which of these would it be worthwhile to suppress or eliminate?

   c. How can these be eliminated?

The third series of questions is parallel, but concerns expectations.

7. a. What expectations about the learning will exist?

   b. Which of the extant expectations are appropriate to (consistent, in harmony with) the educational goals?

   c. How can these be enhanced (emphasized, dramatized)?

8. a. What are other expectations that would be consistent with the educational goals?

   b. Which of these are worth inducing (creating, establishing)?

   c. How can they be induced?

9. a. Which of the extant expectations are inconsistent with the educational goals? (See negative data from 7b.)
   b. Which of these would it be worthwhile to suppress or eliminate?
   c. How can these be eliminated?

With reference to the matter of cognitive styles, mental and physical abilities of the target population, the following questions should be investigated.

10. What is the level of ability to comprehend abstractions (of both the verbal and symbolic sort)?
11. What is the reading skill (comprehension)?
12. What are the mechanical and manipulative skills previously developed in the learners?
13. What are the factors of health, attention span, alertness, concentration and application of effort that will affect the learners?
14. What are the learning styles (in terms of cognitive styles and habits of response to pedagogy) that must be accommodated by the instructional design?

Summary

The questions specified above are primarily concerned with understanding and describing the target population. Appropriate accommodation of these factors can result in significant increases of learning effectiveness in non-formal modes of education.

The next section of the paper draws from research in several behavioral science traditions. The examples cited are but a few of the many pieces of empirical findings that have meaning for the planning of effective learning in non-formal modes.

Research in the Psychological Traditions

Rates and Patterns of Physiological Development

Formal education, with its customary emphasis on the transmission of knowledge, has sometimes stressed the intellectual growth of human beings at the expense of physical and affective development.

The concerns of non-formal education allow no such dichotomy. The physiological development of learners is important in the goals of non-formal education, such as the teaching of skills and disseminating of health information. Research on early physiological development suggests that differences in early child-rearing practices may contribute to differences in physical stature, motor dexterity, and general health and well-being. Hopi, Navaho, and Rio Grande Indian children learn to walk more slowly than Anglos (Dennis, 1940). Negro infants raised in permissive, accepting environments show greater gross motor acceleration than those in rigid, rejecting environments (Williams and Scott, 1953). The motor development of Gandan infants, who are quite precocious at birth, slows down abruptly when they are weaned and sent away to a grandmother (Gerber, 1958). Even though data such as the above are scanty and based largely upon the earliest developmental stages, they suggest that planners of non-formal education should assess the extant motor skills of the target populations for clues as to how readily certain tasks may be learned. They also suggest that some factors which contribute to adult health and motor dexterity may be altered through change of child-rearing practices. The above implies emphases on health education (especially for expectant mothers and mothers of young children) as well as family planning and education in nutrition.

Emergency Reactions

Closely related to research on physiological development are studies of emergency reactions, such as aggression. Early anthropologists have provided some interesting examples of cultural patterning of emotional behavior. For example, when Santa Mata (Colombian) Indians have a severe grievance, they strike a tree or rock with a stick, using insulting language, until the stick is broken. The person who breaks the stick is considered the victor (Sumner, Keller, and Davis, 1927). Similarly, Kwakiutl Indians have institutionalized a potlatch ceremony. A person destroys his own property to gain an advantage over another (Boas, 1925). These rather extreme examples from primitive societies suggest a generalizable principle for non-formal educators: analyzing skills to be taught and the abilities of the learners is not enough; institutionalized rules governing emotional expression within a culture must also be understood and respected if teaching is to succeed. An agricultural education program could fail because the teacher lost his temper in a society where this behavior is not tolerated, or, conceivably, because he created suspicion by "playing it cool" in a society where agression is freely expressed. Accommodation of teaching methods and materials must include an attunement of the teaching style to the demands and norms of the society. If the feeling tone or modes of expression are foreign, the teaching may be rejected or misunderstood. Such considerations relate to the effectiveness of education through television as well as direct personal teaching.

Primary Perception

While physiological and emotional development cannot be ignored in non-formal education, perceptual factors in learning effectiveness loom even larger in their importance. Systematic differences in responses to sensory stimuli have been observed across cultures. In one study (Allport and Pettigrew, 1957) a trapezoidal window illusion was used with Zulu subjects. In this illusion the window wavers backward and forward. Zulus, who were not familiar with Western windows, did not see the illusion. Studies such as this one suggest that great care needs to be exercised in the use of visual and symbolic materials in cross-cultural teaching. Representing three-dimensional objects on two-dimensional surfaces requires students to use perceptual skills which are related to reading ability. Three dimensional models of actual objects will probably be the preferred media with illiterate students. Thus the mechanical operation of a tractor will probably be more readily taught through using the machinery itself than through the use of charts and diagrams. When direct experiences are not possible, prerequisite perceptual skills will probably need to be taught before two-dimensional representations can be interpreted. Specifying crucial prerequisite perceptual skills is an important step toward learning effectiveness in non-formal education.

Piagetian Studies: Conservation

Studies based on Piaget's developmental theory are highly suggestive for non-formal educators interested in learning effectiveness. Two distinct clusters of cross-cultural studies have evolved: one around his theory of conservation, and another around animism and related tendencies. Piaget postulated progression in the achievement of conservation when one attribute, such as volume or number, is held constant while other attributes, such as shape or space, are changed. Studies have substantiated Piaget's findings in quite diverse cultures. They have also revealed some interesting cross-cultural differences. Tiv children (Price-Williams, 1961) achieved conservation earlier than Wolof children (Greenfield, 1966). Greenfield attributed this difference to a more manipulative approach to the environment on the part of the Tiv. Another finding, crucially important to those involved in adult basic education across cultures, is that without schooling, qualitative change in the concepts of conservation appears to cease shortly after the age of nine. Thus unschooled adults in both Hong Kong and Senegal (Goodnow, 1966; Greenfield, 1966) failed to perform better than nine-year-olds on certain tasks. Both Goodnow (1966) and Greenfield (1966) believe that the difference in schooling rather than lower "intelligence" explains the low achievement of these adults. Without the school's emphasis on abstractions there is no experience in abstract thinking or working "in the head." The above findings strongly suggest that the non-formal educator provide unschooled or semi-schooled students with immediate, concrete, perceptual cues and ample opportunities for "do-it-yourself" activities.

Piagetian Studies: Animism

Although cross-cultural studies of childhood animism and related phenomena have failed to produce integrated findings, the scattered bits of information they have provided are highly provocative. Indian children revealed considerably more tendency than white children to assign life to "dead" objects (Dennis and Russel, 1940; Dennis, 1943). Indian children showed less artificialism (tendency to label objects man-made) than white children (Dennis and Russel, 1940). Indian children established a dichotomy between rules for American games, which could be changed, and rules for their own games which they perceived as immutable (Havighurst and Neugarten, 1955). These findings point to a tendency to cling to traditional values when conflicting systems exist side by side. Thus leaders involved in nonformal education may find that even while they are granted special roles as authority figures, the procedures they introduce may be quite peripheral and ineffectual in the indigenous society. Part of the educator's task will be to facilitate the integration of novel elements into the mainstream of the receiving culture.

Intelligence

For several decades there has been interest in developing "culture free" intelligence tests so that whatever these tests measure can be measured cross-culturally. Studies based on such diverse populations as Fox Indians (Carney and Trowbridge, 1962), illiterate Syrian Bedouins (Dennis, 1960), Mexican-Americans (Carlson and Henderson 1950), and American Negroes (Shuey, 1958) have suggested that "culture" is extremely important in intelligence testing and that to date cultural factors have not been adequately accounted for in such testing. True cross-cultural comparisons of intelligence are not possible at the present time. This does not preclude the use of tests standardized within cultures as predictors of school success or of success in certain occupations. They may also provide a basis for useful ability groupings for teaching and experimental purposes. They might prove to be measures of the "modernization" of a population, or predictors of the acceptance which certain educational innovations could expect. Comparative item analyses of easy and difficult test items within cultures would be revealing. However, it should be remembered that what intelligence tests measure is closely related to school success. Their ability to predict the success of non-schooled persons in semi-skilled or skilled occupations is probably limited. Many of the learners participating in "non-formal education" would fall into this category.

Sociological and Communication Research Traditions

Motivation for Learning

Relating to motivations for education is Brembeck's (1965) survey interview of 125 parents, teachers, headmasters, school inspectors and other middle level administrative personnel, high level education personnel and Americans assigned to overseas education missions of various types in India, Pakistan, and the Philippines. He found that there were four sources for educational aspirations: (1) a dominant parent or another person of his kin group who often was illiterate or had little schooling, (2) a person who serves as an "educated model" for either the dominant adult and/or the child, (3) a drive for economic betterment, and (4) an anticipation of respect, acceptance and influence from his kin group. These findings suggest that there are numerous social, economic and psychological forces which are pressing the uneducated masses to achieve an education. Within the minds of these people education has great economic and social "payoff." They expect to better themselves financially and socially. It becomes imperative that education be related to the fulfillment of these aspiration-needs to the degree it is capable. Certainly no education can guarantee greater social acceptance. Education can, however, provide the technical and cognitive skills to enable a person to achieve a socially acceptable job which will enable him to rise above economic enslavement.

Instructional Media

Regarding the question of instructional materials and especially instructional media, there are numerous findings which are germane.

Schramm (1962) compiled the results of 393 experimental comparisons of television and classroom methods in schools and colleges in mathematics, science, social studies, humanities, history, literature, arts, language skills, health and safety. His summary shows that 83 experiments gave significant results for television teaching, 255 showed no significant differences between television teaching and regular classroom teaching, and 55 showed a significant result in favor of regular classroom teaching. He states that "it is apparent that television has been used for instruction with about as much success, over-all, as ordinary classroom methods." Schramm's data suggest that success of television, however, is more likely for younger children, third through sixth grades, and in math, science and language skills. Television is as effective as a teacher and sometimes more effective under certain circumstances. That rather technical subjects, such as math and science, could be effectively taught by television, gives some indication of the wide breadth of subjects available to televised education.

Television has been found to have the highest credibility for news (see Weiss for list of eight studies). The acceptance of television's credibility is a general pattern across cultures (Blumer, 1969 and Starck, 1969) independent of the use of other media. Television is also chosen by the general public as the primary source of general information (Roper, 1969). These findings, along with Schramm's observations on television teaching, suggest that this medium is a highly potent force for non-formal education. Ethiopia demonstrates an example of television usage for educational purposes. By 1966 thirty-seven educational programs were broadcast weekly and within just two years television set ownership increased by tenfold (Patterson, 1966). No other medium can boast of such rapid expansion and such a highly credible acceptance.

Henry Cassirer (1962) points out an alternative possibility for the use of television in education. He notes that it might be prohibitive to seek to install a television set in each primary classroom in each developing country. However, television, with all its attendant positive attributes as a powerful communication medium, could be used to train teachers. The result would be a multiplication of better trained teachers and a reduction of the effects of television's handicap, its mechanical non-human characteristics. He suggests that television be used not solely for pre-service teacher training, but also for in-service training. The implications for nonformal education are clear: teachers (including technician-level agents) can be trained through the television medium by both precept and example and then dispatched into their own local areas to multiply themselves.

Media Forums

Regarding instructional media and delivery systems, the findings in several countries on radio and television media forums have high significance. The studies in Canada (Nicol, *et al.*, 1954), France (Schramm, 1964), Japan (*Rural Television in Japan*, 1960), India (Mathur and Neurath, 1959), and Italy (Tarroni, 1962 and Puglisi, 1962) all confirm the exceptional effectiveness of combining a mediated presentation with local, small group discussion immediately following. This method seems to take the best from several worlds: the expertise of a knowledgeable person presented on the mass medium, the high credibility of television, the informal interaction of face-to-face group processes and the reinforcement received from group decisions to act. Rogers and Svenning (1969) give several pages to a thorough discussion of various types of media forums, their advantages, effects, rationale, and their relation to interpersonal communication. For over a decade various countries have been using media forums for teaching a wide variety of subjects with high success.

Diffusion of Innovations

Relating to the issue of specifying learning tasks, the findings of Rogers (1962) and Rogers and Svenning (1969) are significant. Rogers and his numerous associates have sought to identify those people who most likely will adopt a new idea or innovation through contact with various change agents (for example, teachers, extension agents). Rogers' conclusions are based on various research surveys in Colombia (Rogers and Svenning, 1969) and in Thailand (Rogers, *et al.*, 1969). Adopters are classified according to the time of their adoption of the innovation. Adopter categories are quite similar across cultures (Rogers and Svenning, 1969). Innovators and early adopters score highly on modernization variables of literacy, aspirations, cosmopoliteness, mass-media exposure, social participation, change-agent contact, and higher education attainment. In order for non-formal education to be successful, there must be the adoption into overt behavior of the learning tasks. The adopter categories provide an easy check-list of those within a given social system (target population) who will most likely adopt earlier than others. Thus the educator can focus his attention on the right groups of people. Also, Rogers' studies provide additional guidelines for change agents. That his studies have been in dissimilar cultures and countries, suggests the essential transcultural nature of the mechanisms of change. The non-formal educator would be wise to review these findings and seek to apply them to his own particular country and target population.

Social Sex Roles

In relation to the target population, it would be wise to keep in mind that the two sexes do utilize different skills and abilities of learning, even when the learning tasks are similar. Conditions under which males perform optimumly are not the same as those for females (Garsi and Scheinfeld, 1968, summarize 474 references to sex differences in learning). The communicator in non-formal education must seek to know how learning differs between the sexes. He must also seek to tailor-make his teaching-learning experiences according to these differences. This is complicated when both sexes cannot be segregated or when the subject matter, e.g., literacy, appeals to both sexes. In these situations, the teacher must be able to provide experiences that will maximize the learning conditions for both sexes. It may be extremely difficult for some men to teach women and vice versa.

Classroom Structure

Avila, *et al.*, (1968) reports that culturally and economically disadvantaged school children benefited more than advantaged children from more structured classroom settings. They explained these results by observing that disadvantaged children had more freedom outside of school than they could successfully cope with while, by way of contrast, advantaged children lived within a more structured environment. The significance here is that sufficient structure is needed in a learning experience to provide guidance, but that the need for more or less structure is related to socio-economic factors and to learning styles. The educator must therefore be well aware of his target audience's characteristics as he plans the learning environment and pedagogical styles and media.

Elaborated and Restricted Codes

Bernstein (1969) adds another dimension of the understanding of a target population through his study in England of elaborated and restrictive codes and their relation to social origins. His socio-linguistic approach seeks to provide some help in understanding how one's social setting pre-determines the way in which one decodes and encodes messages. It is his conclusion that the lower or poorer class uses a restricted code in which syntax and vocabulary are greatly limited, thus allowing for a certain degree of predictability. In the upper classes, there is an elaborate code in which syntax and vocabulary are chosen from a broad range of possibilities, reducing the predictability of a given communication. Schatzman and Strauss (1966) report basically the same findings in their comparison of lower and middle class encoding of a natural disaster in the State of Arkansas in the U.S.A. It appears then that the socio-cultural-economic status of the person involved in a learning situation will greatly affect his ability to comprehend communication aimed at him and his ability to communicate to others. Also, Schatzman and Strauss suggest that the individual displays his modes of thought through his communication behavior. It is, therefore, necessary for the teacher to "get inside of" and empathize with the learner in order to understand how the various messages to and from teacher and to and from pupils are received. The teacher from another culture surely has this problem, but the teacher from another social level from within that same culture also has that same difficulty.

The Emerging Understanding of Cognitive Differences: Implications for System Design

The term "cognitive style" has been used to suggest the particular way a person's mind operates in the processing of ideas. The main use of the term is in reference to differences among people's approaches to information and differences in their modes of mental processing. The term encompasses all sorts of differences, no matter what their origins. The concept "cognitive style" owes its respectability to a social-environmental view of mental development; it relates to the sorts of differences in functions and uses of the mental processes which can be attributed primarily to experience (in contrast with genetic heredity). Thus for the student of cross-cultural communications and education, differences in cognitive style are of great concern since what the culture and physical environment have caused the learner to become must be known and understood if one is to reliably plan and design effective learning experiences.

People from different cultures respond differently to similar situations. Different people perceive or interpret a perceived situation differently, and therefore respond in what they consider to be the appropriate way. In the search to specify why and how these differences occur there have been several approaches.

One earlier approach made by anthropologists was with the concept of "ethos." Ethos was conceived of as a general orientation of a culture to respond in a given way by structuring its customs and institutions according to one guiding principle. A contrasting pair of these principals were the Dionysian and the Apollonian, the free and indulgent as against the controlled and ascetic. Later when this course did not prove fruitful the idea was that there were multiple "themes" in a culture which served to pattern the institutions and explain the variability within the culture.

Another way of attacking the problem was through the Sapir-Whorf hypothesis: language structures a person's thought, perceptions and reflects a specific world view. As such, those who speak a certain language are programmed to categorize situations in determined ways, and to respond accordingly. Some studies have been done at the morphemic or vocabulary level with no positive results. This approach can be questioned from several standpoints. Why do different subcultures using the same language respond differently, if they use the morphemes in common? Vocabulary is the most transient part of language. While it is true that it provides the categories for ordering and expressing perceived experiences, the categories are so elastic and transient that they could not be determinants in any very strong sense. Word categories overlap (synonyms), change rapidly, expand, alter focus in different contexts, and at times become almost meaningless due to the wide range of referents (e.g., science, freedom). One experiment showed that they were not determinants in limiting perception. In a language where colors were categorized in broad categories, so that there were no separate terms for red and orange, people could nevertheless distinguish different shades quite easily. If the morphemic level is not adequate for determining thought, possibly it is at the syntactic level, where categoreis are ordered, that accounts for the differences in responses. Syntactic structures are much more stable than morphemes. Linguistic contrasts that suggest this possibility are reviewed by Glann (1966).

But still, the same words can be used to express different world views. Words play a reciprocal role with experience. As a word is used in different contexts, its meaning changes for the individual. It is in this way that a language can be used to teach ideas that are new, and even at odds with the accepted world view of the individual, but it can be done. The diffusion of Buddhism, Islam, Christianity and Communism testify to it. Still one might react and say that in each case, as the religion has diffused, it has been modified by the culture to which it has gone. But in exactly what way have they been modified? Have they been completely changed, or do the basic concepts remain, clothed in some of the trappings of the receiving culture? In any case, words are both determinants, and determined by the experience and use.

In earlier writings, we have suggested six levels for making a functional translation or adaptation of pedagogical materials: Level 1, language is conceived of as more or less straight translation; Level 2, adjusting vocabulary deals with making the complexity and difficulty of the style to agree with the level of the target audience. The Level 3, changing illustrations has to do with adopting the images and figures to ones within the experience and traditions of the target audience. The last three levels, 4, adjusting to pedagogical expectations, 5, recasting the content to reflect the world view, and 6, adjusting to the learning styles seem to overlap. There is a real question as to whether, after having transferred materials on the first three levels, there is enough residue of difference that it would be possible to identify and use such differences in any objective and consistent way in the further modification of the materials.

Learner expectations possibly differ radically with respect to the subject matter. Due to the spread of western education around the world, academic subjects (and the prestige they carry) are expected to be learned in the complex of the "school." This category or complex of traits includes teachers who know, students who are not expected to know, books, blackboards, rows of chairs one-way communication, administrators, gowns for teachers, uniforms for students, dormitories, dining halls, examinations, grades, scholarships, etc. That which does not include enough of these traits to identify the complex is interpreted as not being a real school, even by those who have never been to school. On the other hand, learning to operate a tractor or to repair a motor would not fall within these school expectations, and consequently can be learned in other contexts without conflict--but also without the prestige. One wonders if the reason programmed instruction has been so useful in industry and the military might partly be that they must teach, but are not expected to be a "school," and therefore can "legitimately" use any method that works.

Thus we come to the possibility that the compartmentalization of expectations and world view with respect to different aspects of life is, in itself, basic. If a world view is a set of assumptions about reality that a person uses to organize and interpret situations, it may be quite possible for a person to operate with different sets of assumptions for different aspects of life. For instance, a person from an animist society might learn accounting or electronics and operate within one set of assumptions for his work, while at the same time using a completely different set when in the context of illness or family affairs. It is undoubtedly impossible to keep these compartments completely separate in different role assignments, and this leakage would account for the types of conflict portrayed in the "cargo cults" and similar movements. In some individual cases and in certain societies where roles are kept rather well isolated, it is possible to maintain the relative isolation. A familiar case is the man who is a "religious person" on Sunday, but reverts to the dog-eat-dog business ethic during the week, where the office role and the church-member roles are kept separated.

If this compartmentalization is real, it might well be that in each area of life, certain learning expectations occur, therefore certain institutional and teaching strategies may require modification if the appropriate expectations are to be fulfilled. Conversely, if these expectations are not conducive to adequate learning, it may be appropriate to try to alter the expectations in order to teach effectively. The extension theological education program might be rationalized in this way.

Studies reviewed by Bruner and his colleagues (1972, *Relevance of Education,* chapter 2), indicate a notable difference in the mode of thinking between those who are literate and those who are illiterate in certain African societies. The individual does not seem to break away from what Piaget calls "concrete operations" to use "formal operations" until he becomes literate. Being forced to abstract language symbols on another level, and having to order them in writing changes thinking to "formal operations." According to Piaget, as a person moves from one stage to the next, he does not cease completely to think in the earlier modes, but builds on these, so that certain categories are still carried on in the former stage. The modes of thinking associated with certain areas of activity or role assignments may be so that an individual might deal with accounting or electronics on the level of formal operations, but sickness, or religion on the level of concrete operations or preoperational modes. This may be the difference noted between Hebrew and Greek thought; for instance contrast Proverbs with Romans in the Bible, or African proverbs with the physics taught in public schools.

In those areas of life in literate societies, where a person concentrates most of his activity and effort, it is likely that he will use formal operations, and will be more likely to modify his behavior. This conclusion is consistent with Bruner's contention that traits learned earlier in life are more resistant to change than those learned later in life.

Conclusion

"Cognitive style" may in fact be essentially a manifestation of the person's perceptions reality (world view) and the way he combines these perceptions (formal, concrete operations) to interpret and respond to a given situation. The set of assumptions that make up the world view, and the operations that he used to combine and interpret them may be quite different for the different roles the individual plays. The expectations for appropriate learning situations may also correspond to each of these role sets or areas of life.

Human Resources: The Key to the System

The "radical school movement" in the United States believes that significantly better schools will have to be radically different schools. But the overriding concern of the developing nations deals not with better but with enough schools and schooling for those for whom no school has been provided and in providing relevant education for their industrially developing economies. In order to anticipate the problems that American and European schools have encountered, the criticisms, theories and practices of the radical educational reform movements should be considered now in the developing nations. Thus they might avoid ultimately coming into the dilemma in which education in America finds itself. No one should claim that "more of the same" will bring progress and development to nations that adopt western-style formal educational structures and procedures. Many have found them "lacking."

The policy of investing more aid overseas in formal, elitist, and traditional structures is being called into question. For some of the same reasons here in the United States, objections are also made to further propagation of formal schooling. The inability of many municipalities to pass their bond issues is interpreted as public non-support of the *status quo*. In the United States, urban ghettos, black or chicano leaders want radical political reform, they want to control their schools. The radical reform theorists such as Goodman, Friedenberg, Henry, and McLuhan see the schools as agents of a sick society majoring in "suppression, irrelevance, inhumanity, manipulation, and the systematic stultification of what is most promising in youth" (*Radical School Reform,* p. 17). The radicals propose a dismantling of the whole school systems and a complete remodeling or remaking. Charles Silberman in *Crisis in the Classroom* examines the present dilemma of American education. He criticizes the failure of the public school to contribute to "facilitating the movement of the poor and disadvantaged into the mainstream of American economic and social life" (p. 53). Though there are other serious problems in formal education, economic and social concerns should be of special interest and study to proponents of non-formal education in the developing nations.

Silberman levels criticism at the massive reform movements of the 1950's and 1960's and admits though "the reform movement has produced innumerable changes, . . . the schools themselves are largely unchanged" (p. 159). He explains that substantive reform was not attained because the reformers ignored the experiences of the past reform movements and either ignored or failed to understand the "harsh realities of classroom and school organization" which affect the ways teachers teach and schools operate (p. 180).

Non-formal education must be forewarned if it is to fulfill its promise to provide alternatives that are not schooling for schooling's sake. The training of human resources for non-formal education is a basic issue. What sort of learning environment is apt to be most effective? What kind of a teacher is needed for the non-formal educational environment? How should he or she function?

If learning is truly motivated within the learner, then he should be given the right to decide what he wants to learn, and when and how he wants to learn it. This can be qualified by affirming thus the teacher functions as a resource person, helper, guide, encourager and consultant, and not necessarily as a transmitter, judge and authority. These assumptions underlie Paulo Freire's contentions that the content of "themes" used to teach illiterates must be highly local and originate with the students, and the trained illiterates or semi-literates should be the teachers of illiterates. According to Freire, these conditions constitute the only really viable method for raising peasant masses "from oppression to freedom."

The teacher technician or agent in the non-formal mode of education must help people to improve in their ability to learn, to acquire knowledge, and especially to be able to ask and answer important questions themselves. (Education too often occupies itself in answering questions no one is asking!)

Effective learning, regardless of the setting, implies performance of a given goal. The emphasis in non-formal education lies in the area of practicality and in functionality. Its value can be determined in terms of the utility of the learning it produces. It is not "schooling for schooling's sake" but schooling for education or learning directed to specifics or goals concerned with improvement of social and personal living, occupational capability and vocational competency. In the non-formal setting, it would seem that the learning to be achieved is directly related, not only to society as a whole, but also to the individual. Thus the teacher or leader should possess:

1. The ability to involve the clients ("students" or "learners") in an analysis of their higher aspirations and the changes necessary to achieve them;
2. Ability to diagnose any obstacles that must be overcome in order to achieve changes; and
3. Planning of effective strategy for accomplishing the desired results (Knowles, p. 34).

Who should be trained as a teacher or leader for non-formal education? Academic subjects can be taught by the person produced by the formal educational institutions. But is there adequate correlation between school performance and life achievement? Gross contends that for children up to twelve years of age there is necessity of formal subjects or pre-arranged curriculum and that any benevolent grownup, literate or illiterate, has plenty to teach an eight-year old. Further, he argues that the only profitable training for teachers is a group therapy and, perhaps, a course in child development (Gross, p. 100).

Preston R. Wilcos (in Gross, p. 125) writes about the community-centered school and outlines a program committed to learning for use, developing a sense of functional curiosity, and the participants' assuming a large part of the responsibility for developing their own intellectual resources. The community learning center is intended to become the facility where the community begins to meet its latent needs for recreation and fun, where it begins to formalize its efforts to express itself through art, music, drama, etc., the locale for shaping community policy as it relates to housing, traffic, health, education, and other social issues, and the arena for developing and implementing mutual-aid programs designed to aid the less fortunate in dealing with their problems (Gross, p. 129). Certain key problem areas in non-formal education can be taught and/or shared by persons who are doing the kinds of things they are to teach. In some cases, a member within a given group may be selected by that group to leave the community in order to learn a given skill and then return to the group to teach the others what was learned.

How is the teacher trainee to be selected? Two or more of the following attributes are desirable in the trainee:

1. Knowledgeable in the subject matter and a successful practitioner of his subject or skill;
2. Enthusiastic about the subject and about teaching it;
3. Understanding about people (personality traits of friendliness, humor, humility and interest in people);
4. Creative in thinking about teaching methods and willing to experiment and innovate to meet changing needs and interests,
5. More concerned with the development of the individual than with just a presentation of facts; and
6. Respected in the community or occupation group (adapted from Knowles, p. 163).

Trends and Implications for Educational Manpower

The human resources factor--faculty and staff--is the most costly factor and represents from 60% to 90% of total costs in a given educational system (Coombs, 1968, p. 89). In reality, education is one of the last widespread "handicraft" extant in the modernizing world of today! A crisis of educational economics is being faced in many nations and of course, the biggest problem is the cost of human resources.

It is anticipated that teacher costs in the non-formal sector will be considerably lower than in the formal sector. The possibility of packaging the training and using various film and tape media will also result in lower costs due to mass production as well as to the fact that they can be delivered by lower paid amateurs or technician level teachers.

Philip Coombs attributes the educational crisis--worldwide but particularly difficult for the developing nations--to (1) the student flood, (2) acute resource scarcities, (3) rising costs, (4) unsuitability of output, and (5) inertia and inefficiency (Coombs, 1968, pp. 164-165). This crisis in turn has arisen largely because of the increased social demand for education. Children and parents express increasing aspirations for education to improve their financial lot and status while governments see education as a precondition for overall national development. The "democratic imperative" for increased political participation also puts great demands on education. Behind all of these pressures is the rising population rates (Coombs, p. 18).

"Schools are remarkably clumsy instruments for inducing large-scale changes in underdeveloped areas. To be sure, formal education has had immense impact in Africa, but its consequences have rarely been those anticipated, and the schools have not often functioned in the manner intended by educational planners" (Foster, *Education and Economic Development,* p. 142).

Implications of the pressures on the educational sector include suggestions about the selection, preparation and assignment of teachers and technicians in non-formal education:

1. Vocational and technical training should be done mainly outside the formal schools (training should be linked to on-the-job experience).
2. Training should be designed and operated as extensions of work situations.
3. The labor needs of existing industrial and commercial firms should be used as a primary motivation.
4. Government, generally the single largest employer of skilled labor, should develop technical training related to its needs.

5. Instruction should be made available to assist in simple business procedures for the local small-scale entrepreneurs who are involved in trade, commerce, transport and small scale manufacturing. (They are sometimes the forgotten sector in development plans.)
6. Training for artisans and technicians should be provided (adapted from Foster in Anderson and Bowman, 1965, p. 158).

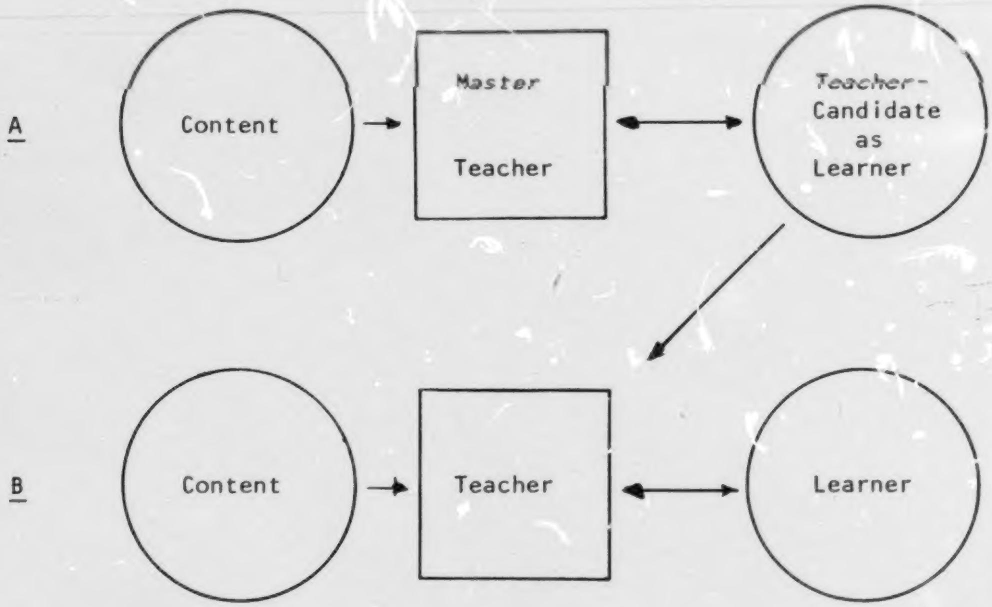
Foster analyzes the problem of agricultural training, advocating that agriculture education must be directed toward the farmer himself and not toward school pupils. He writes, "Any attempt at agricultural training presupposes that a meaningful structure of incentives exists for the individual farmer to increase his output, improve his techniques, and expand his range of activities. Without such incentives and opportunities, agricultural education can have little impact. Instruction must go hand in hand with changes in those institutional factors that militate against innovation. Clearly, an important area for investigation is the functional impact of traditional systems of land tenure in retarding development. It might be argued that the emergence of the concept of land as an individually owned resource, freed from traditional restrictions upon alienation and transfer, could do more than anything else to facilitate the emergence of progressive farming" (Foster, 1965, p. 159).

The following model is suggested as a conceptual framework for the development of human resources in non-formal education. It suggests questions regarding the relationship of the teacher, leader or trainer within the total system's design.

The essential difference between sets A and B in Figure 7 is of degree rather than kind, both sets (rows) are 3-element linkages. Here we must ask who the master-teacher should be and what he is to do. (We must not forget that peers learn effectively from one another and can be utilized in the role of mutual teaching.)

The master-teacher should preferably be a professional in the content area he is to teach; a skilled tradesman or craftsman who has the ability to communicate with potential learners; a knowledgeable

BEST COPY AVAILABLE


A
Content
Master Teacher
Teacher-Candidate as Learner
B
Content
Teacher
Learner

Technician as Facilitator of Delivery

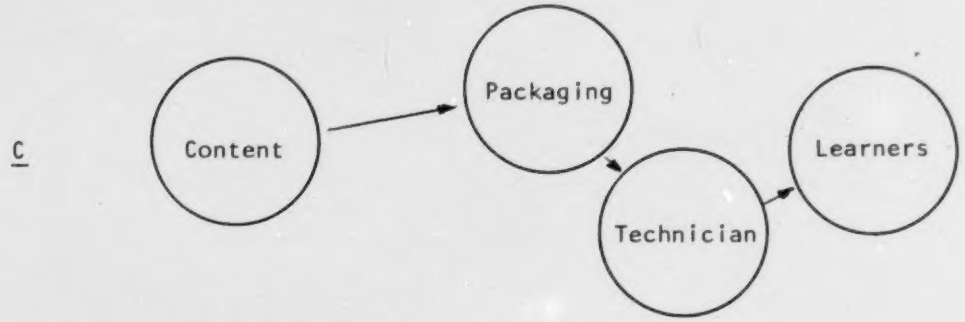

C
Content
Packaging
Technician
Learners

Figure 7.--The Teacher as Interface Between Content and Learning.

person who works at or in the area in which he will instruct other teachers. The master-teacher will likely be found wherever the skill or competency is practiced.

The master-teacher needs to train teacher-candidates utilizing the methods he expects them to use. This is not just a matter of demonstrating teaching but teaching by demonstrating! The nature of the knowledge or skill to be taught should determine the method. Here is the value of on-the-job training and practice--learning the skill by practicing it.

One of the most critical areas to consider in developing personnel for training responsibilities is the environmental context of the training task. Whether the trainer needs to operate within the structure of an organizational system of a school or governmental agency, a social or community entity (private agency, church, etc.) or an industrial or commercial establishment does not alter the basic need for relevance of the learning experiences. They should occur in meaningful context.

In the process of selection, the manager should evaluate candidates in terms of their standing before peers within the community or occupational group. Who is the person who exercises influence over people in a given group system or community? This will be the person (or the designator of the person) who can be most successful in performing the training task. Rogers writes that ". . . success or failure of programs of planned change depend ultimately upon the ability and cooperation of local leaders at the village level." Though a teacher may be technically competent, his influence may be rendered relatively ineffective without the respect and status of the groups. Rogers also indicates the importance of the similarity of the "change agent" and the target population. If most of the clients in a target system only possess two or three years of formal schooling, a university trained change agent will face greater communication difficulties than if he had less education (Rogers, p. 181). Thus agents of non-formal education should be selected who are as similar to the client group as possible. "Evidence for this statement comes from a study by the Allahabad Agricultural Institute. Iadra Village level change agents with only an elementary education were more effective in reaching Indian villages than were change agents with high school and university education" (Rogers, p. 181).

The importance of peers, one-teach-one approaches, and influences through the family take on extra credibility in light of experiences within the field of education of the handicapped.

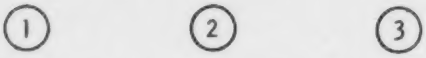
Karnes suggests that "the best hope for raising IQ and achievement levels of disadvantaged children may be to train their mothers and older brothers and sisters to teach them--but what they teach must be cognitively oriented and highly structured" (Karnes, *Information Network-SERVICE,* April 14, 1972). Karnes observes that for low-income and exceptional children, one year of intervention is not enough to make substantial and lasting gains no matter how much gain the children make. Her own program, stressing verbal responses and information processing produced high IQ gains, 14 points, at the end of the first pre-school year. The gains began to dwindle, especially for the brightest children, until by the end of the first grade there was no appreciable difference between her program and a regular kindergarten. The conclusion of Dr. Barnes is that trained amateurs may be the best hope for long term gains because this will permit a low pupil-teacher ratio which is what these children need. In this situation, the paraprofessional knows precisely what she is supposed to do, she can evaluate her effectiveness immediately by seeing the child perform the defined task and she can see the results of her work in the day-to-day improvement of the child. One program that produced substantial long-term effectiveness involved a six to eight week tutoring period by 12 to 16 year olds for their little brothers and sisters. The key to implementing such programs is the effective trainer of paraprofessionals.

Four configurations of relationships among learners can exist, depending on the structure of the learning relationship:

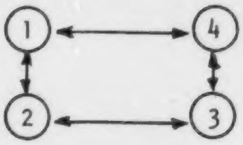
BEST COPY AVAILABLE

1. Peers can compete as isolates (solo participation in a correspondence course)

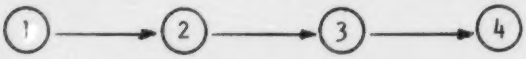
    - Learners in Isolation



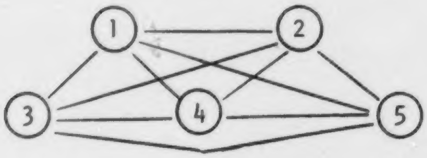
2. Learners as Peer Competitors (competing for grades, status)



3. Learners as Sequenced Peers (one teaches two, who teaches three, etc.)



4. Learners as Mutually Responsible Peers.



In terms of learning effectiveness the third and fourth models are superior and are becoming more common, especially within industrial and military training.

Guidelines for Effective Learning

The paper has demonstrated the complexity of the problem of planning for effective learning. There is no way to simplify the tasks, it is only possible to make them more clearly defined and to arrange them in convenient and scientific sequences. Basic to these sequences and to the designs which they will enable are several understandings. Designing effective learning in non-formal modes depends on these understandings.

Understanding the Historical and Cultural Sources

Within every society there are sources in the traditions and the value systems that have given rise to what education has become. That which a culture has produced cannot be overlooked in the planning of something new. Whether education is a matter of elaborate institutionalized efforts or merely the simplicity of familial and tribal influences, rituals and indoctrinations, the sources are in the history and in the cultural milieu of the society. Before attempting to augment or significantly alter the educational resources of a community, region or nation, these sources must be examined and, to the extent possible, understood. Such understanding is necessary if new non-formal resources are to be designed in such a way as to have an ultimate accommodation (interlock) with the existing formal and informal systems of teaching and learning. With reference to these factors a guideline is offered:

> *I. For effective learning, non-formal education should be designed to interlock into the cultural and historical traditions of a society.*

Understanding the Target Populations

Of all the many variables in an instructional system, the target population is likely to be the most complex. The three sets of factors that must be understood are (1) the motivations that drive the learners and the sorts of psycho-socio-economic rewards that will sustain them as learners; (2) the habits and expectations that their previous learning experiences have induced; and (3) the styles of mental processes and learning characteristics that have been induced by previous formal and informal learning experiences. With reference to the first set of factors a guideline is offered:

> *II. For effective learning, non-formal education should provide experiences for which there is a practical use.*

BEST COPY AVAILABLE

Education without an outlet for the learning is useless. Incentives for learning should be perceptible to the learners and should be specifically rewarded within a relatively short period of time. The second set of factors also suggests a guideline:

> *III. For effective learning, non-formal education should utilize instructional procedures that are recognizable to the learners as being learning experiences.*

This guideline can be interpreted as suggesting that only "old" methods should be used; however, there are many occasions wherein learners can be carefully and gently re-educated to recognize the learning potentialities in new procedures and forms. Thus it is possible to introduce new media and methodologies if the design provides for the necessary re-education needed to accept the new procedures.

The third set of factors suggests another guideline:

> *IV. For effective learning, non-formal education should employ instructional materials designed specifically for the dominant characteristics of the learning styles and mental processes of the learners.*

Since the dominant characteristics of learners' styles are largely in common within a society this is a realistic guideline. Not enough is known about cultural guidelines. Not enough is known about cultural factors that affect learning style; thus we cannot be sure that we are taking everything important into account, but there are a few highly significant continua or axes, such as the distinction between global and articulated cognitive styles, that do have high relevancy for the design of instructional materials (Hovey, 1971).

Understanding the Administrative and Managerial Demands of an Instructional System

The instructional system consists of far more than a plan for the delivery of educational resources. Perhaps even more important than the delivery system itself is the management and evaluation of the system. With reference to this matter two guidelines are offered:

BEST COPY AVAILABLE

V. *For effective learning, non-formal education should be designed to operate within a management system capable of correlating human and physical resources as well as articulating all potentially contributory agencies.*

VI. *For effective learning, non-formal education should operate within an evaluative structure that provides data for continuous improvement of the instructional procedures.*

An instructional systems approach to non-formal education accepts the view that objectives are as important as procedures. Many programs of formal education are a result of valuing the perpetuation of procedures more than the achievement of goals. It is recommended that non-formal education be planned so as to respect the relationship of objectives and procedures indicated following:

1. Make a general statement of the problems and/or needs to which the non-formal education is to relate.
2. Make a statement of goals and objectives for meeting the needs.
3. Determine and operate a set of procedures that will likely achieve the goals.
4. Carry on a continuous evaluation and modification of procedures to assure that they achieve the goals.
5. Periodically assess the problems and needs in order to modify the goals and objectives of the system.

In such a relationship, the procedures of the system are less important than the goals; and the value of the goals is dependent on their relationship to the reduction of problems and the meeting of needs. As needs and problems change, the goals and objectives must change. As evidence indicates that goals could be better met, the procedures are changed.

Summary

No simple response to an educational need--whether formal or non-formal--is apt to be adequate.

Designing non-formal education that will lead to effective learning is a complex task. The relationship of the learning experiences to the learners' characteristics and life experiences constitutes the most demanding problem. Almost as complex is the problem of developing an administrative and evaluative framework adequately assuring the continuous refinement of the system.

Postscript: The Ecology of the Formality in Education

Taken as a whole, schools constitute the major educational institution in the typical industrialized nation. As such, schools serve the typical sociological function of an institution: they stabilize the society. The stabilizing effect is generally seen as the result of essentially conservative social roles. The society rewards and supports the institution in response to its effectiveness in preserving against disorder or other change. Because the *status quo* is "safe," in the sense that its problems are already familiar and accommodated, change is less popular. Schools are expected to maintain traditions. The challenging--much less changing--of the social order is a disputed role of the schools.

Thus in an era of rapid social development and new technological and political threats, the society's disuse of schools for social change becomes a liability. Reformers and social strategists attempt to place increasing loads on the schools; the *status quo* is challenged. Yet the schools remain stubborn. Despite the best efforts of well-meaning reformers and innovators, the schools persist in their academic traditions. What results is an increasingly violent swinging of the pendulum: to the left toward this change or that; to the right in reaction and righteous indignation; back and forth. Surely the citizen's view of his schools must seem either confusing or hypnotizing. Many have come to accept this movement from one excess to another as an inevitable characteristic of the processes of rapid educational progress. Others, less optimistically, see no particular progress, only the swinging back and forth.

Much professional effort is invested in the improvement of schools. Even as Americans are an extension of the perpetual Western search for frontiers, so are professional educators--particularly American educators--searchers after the improvement of educational experiences. One thing after another is tried in the ever more costly search for school improvement. A hallmark of the professional educator in the recent traditions of formal education is an optimism and faith in the feasibility of improving schools. Perhaps no more unpopular hypothesis can be offered than this: certain characteristics of formal education are inherent and hençe not subject to any permanent improvement.

A systems view of education considers the whole ecology within which learning processes occur. Thus when certain recurrent characteristics of schooling persistently show up--through history and cross-culturally--we must at least consider the possibility that they are inherent and inevitable "rest states" of the schooling situation.

It is beyond the scope of this paper to support any of the following hypotheses with data, but they may be useful to the designer of non-formal education. Since non-formal education offers the potentiality for designing learning experiences that avoid some of the weaknesses of formal learning environments, it may be important to be reminded just what some of these weaknesses are.

The following twenty items are drawn from the literature and experiences of curriculum development. Since each of these is so persistantly and commonly a target of one or another of the "reform" innovations, it seems reasonable to suggest that some or all of these is an inherent, unchangeable characteristic of formal education.

Sources of Weakness in the "Schooling" Approach to Education

1. All learners are assumed to be similar in terms of needs, interests and abilities.
2. Conforming behavior is preferred over divergent and non-conforming behavior.
3. Learners are increasingly made more competitive at the price of cooperation.

4. Learners are expected to be receptors of learning rather than communicators.

5. The learner's part in decision-making is minimal and tends to be steadily reduced.

6. The responsibility for attitudes and feelings about content and about learning itself is attributed to the student.

7. The content to be learned is justified in terms of future needs of the learner.

8. Schooling's major justification is preparation (mostly expressed in terms of eligibility for more schooling).

9. Evaluation is concerned almost exclusively with cognitive learning (knowledge of information and processes) and skills.

10. Learning experiences are designed or selected on the basis of values of the adult and established world.

11. Abstractions of experience (in the form of language and symbols) are substituted for realities.

12. Rewards are symbolic more than real. Even the satisfactions of seeing oneself develop are subordinated to imposed systems of rewards.

13. Punishment is assumed to increase learning.

14. Punishment is a virtually sovereign right of the teacher.

15. The teacher is ascribed authority, thus creating a hierarchy based on unearned status.

16. The social distance that separates teachers from learners is increased by according different sets of rights and expectations to each.

17. Learning experiences are designed (and limited) to fit time blocks.

18. Learning experiences are designed (and limited) to fit standard locations and space.

19. Testing is the criterion of success.

20. Success is the surpassing value.

Each of these factors, alleged here to be threats to learning effectiveness, is potentially present in any learning environment. To the designer of non-formal education goes the challenge of seeking ways and means of avoiding these threats. A careful systematic approach to the design of non-formal learning experiences can enable the designer to escape some or all of the threats to effective learning.

BIBLIOGRAPHY: CHAPTER II

Banghart, Frank. *Educational Systems Analysis.* New York: The Macmillan Company, 1969.

Bruner, Jerome. *Toward a Theory of Instruction.* Cambridge, Mass.: Harvard University Press, 1967.

Howelson, Patricia, Elaine Haglund and Ted Ward. "Cross-Cultural Adaptation of Programmed Instruction." East Lansing, Michigan: Human Learning Research Institute, Michigan State University, 1970 (mimeographed).

Hovey, Richard. "Cognitive Styles in African Cultures: The Global Articulated Dimension." Unpublished Ph.D. Dissertation, Michigan State University, 1971.

CHAPTER III

RELATING INSTRUCTIONAL PROCEDURES TO LEARNER CHARACTERISTICS: AN EXPERIMENTAL ILLUSTRATION IN BRAZIL

Lois McKinney and Ted Ward

Learning effectiveness must be considered in reference both to short-term and to long-term effects. In the short-term, an instructional experience is effective to the extent that the following conditions pertain:

1. *THE LEARNER IS AN ACTIVE, INVOLVED PARTICIPANT IN THE LEARNING EXPERIENCE.* The experience is of sufficient interest to the learner to engage his learning process.
2. *THE LEARNER FINDS MEANING AND WORTH IN THE EXPERIENCE.* The experience is organized and presented in such a way that the learner can comprehend it in reference to his present condition, needs, and background.

In the long-term, an instructional experience is effective to the extent that these conditions pertain:

1. *THE LEARNER CONTINUES TO LEARN AS A CONSEQUENCE OF THE EXPERIENCE.* The experience initiates or stimulates learning processes that can and will continue to operate in the learner after the instructional experience is concluded.
2. *THE LEARNER FINDS PRACTICAL VALUE IN THE CONTINUING USE OF THE LEARNING.* The experience provides knowledge and skills that will continue to have usefulness in life-changing ways.

In any learning experience, formal or non-formal, the short-term effects determine whether or not the learner will voluntarily "stick with" the experience; the long-term effects determine whether or not the experience will "stick with" him! Since non-formal education is typically concerned with practical and life-changing effects, it is especially important to consider the long-term consequences of the instructional experiences. To the scientist or evaluator, effectiveness of any given experience is of interest after the fact; but a designer or planner of an instructional experience is concerned before the fact. He wants to design or to improve the design of a learning experience so that it will be effective for the intended learners.

As is also the case in formal education, instructional design in non-formal education is often a neglected matter--the assumption is made that if "competent teachers" are hired to deliver tne instruction, in person or through media, effective instruction will result. This is not a safe assumption. Especially in the sort of non-formal education that is detached from the mainstream of formal education, "competent teachers" may tend to use inappropriate instructional procedures that are based on their own previous experiences with formal education or with dissimilar learners.

Much attention should be given to the design of instructional experiences for non-formal education. Experiences in Brazil and elsewhere have convinced us that the procedures used to provide instruction tend, over time, to teach (acculturate?) learners in ways every bit as important as the content of those instructional experiences. Marshall McLuhan's contention that "the medium is the message" can be illustrated clearly in reference to the effects of procedures used to deliver instructional communication. Thus if problem-solving skills and autonomous self-actualized learning are among the ultimate goals of a non-formal learning experience, it is crucial to avoid methods and procedures which will produce passivity and dependence in learning style. When the desired end result of a program of non-formal education is self-actualizing, autonomous, sustained learning or even the continuing use of specific learnings in reference to a changing series of problems or tasks, learning effectiveness must be viewed as the development and maintenance of certain characteristics of style or approach within the learner. The following table indicates the contrasts between effective and ineffective learning in reference to four of these characteristics.

Characteristics Evidencing Ineffective Learning	Characteristics Evidencing Effective Learning
- disrespect for oneself as a learner;	- recognition and acceptance of one's worth as a learner;
- conviction that one can and does learn valid information, ideas and skills only when in the presence of a master;	- confidence in the validity of what one learns independently;
- tendency to accept as unalterable the ways things are; e.g., knowns are meant to be knowns, unknowns are meant to be unknowns; knowledge is a matter of accepting rather than of searching.	- tendency to inquire and to seek; assumption that unknowns can become knowns,
- assumption that learning and knowledge are abstract and not expected to make direct impact on behavior.	- expectation of being changed by what one learns.

The interaction between instructional methods and content is also very important. Especially in those forms of non-formal education concerned with scientific and technological innovations, the grasp of cause-effect relationships and the capacity for relating principles to new situational particulars are essential elements for long-term effectiveness of learning. These sorts of learnings cannot be effectively acquired through simple fact-recall or rote procedures. The Science Education Programme in Africa has been struggling with this issue for several years. This project has been vitally concerned about consistency between content and instructional procedures in special reference to science. The Director, Hubert Dyasi of Sierra Leone and Ghana, writes:

> SEPA should also encourage a systematic collection of information on children's background (especially as regards their ways of knowing) and of the significance of educational processes embedded in their culture, in order to aid both instructional strategies and evaluation.[1]

The Experiment in São Paulo: Its Origins

The study of a particular set of learners in an experimental program of non-formal is described in the following sections of this paper. A series of studies in "ethno-pedagogy," the cultural factors affecting teaching and learning, has been carried on at Michigan State University for several years.[2] The study reported here demonstrates the use of experimental procedures to discover ways to make learning more effective in a given program of non-formal education. Although the study is more elaborate and detailed than is feasible for many or most programs of non-formal education, the conclusions here have general applicability to non-formal education, and the experimental design, even if used only as a general model, could provide useful insights during the pilot-project phase of any new program of non-formal education.

That most Latin Americans are "rote learners," is a commonly accepted axiom among Latin American observers. Such simplistic generalizations, often based on an inadequate understanding of what one is seeing, become stumbling-blocks to subsequent observations. What we think we saw becomes an expectation that can bias us to see it again the same way. This innocent selective focus is stubborn; it can begin with an explorer or a tourist and ultimately be reflected in the scholarly treatise of a reputable anthropologist.

Because the stereotypes often arise from some local reality as viewed by an outsider whose perceptual framework is different, the outsider's conclusions are often reasonable enough to other outsiders. Even generous insiders may be willing to accept the outsider's generalizations on a comparative basis, conceding that the outsider's frame of reference may be more "objective" since it is supposedly larger.

Although careful comparative research usually intends to provide guarantees against stereotypes and other faulty generalizations, experimental research methods are perhaps more capable of identifying the faults in assumptions and "accepted" proposition. Experimental research makes its greatest contribution when it goes beyond the rudimentary testing of hypotheses to allow for systematic review of the underlying assumptions on which the hypotheses are built. Considering the important advances in knowledge that can derive from well-executed experimental research, one may wonder at the relatively small percentage of cross-cultural studies of education that make effective use of experimental procedures. There are good reasons: foremost is the fact that experimental studies (even in one's own culture) are difficult in educational research, as in any other applied social science field. Experimental subjects in social research are dynamic creatures in complex environments, not experimental animals that can be submitted to highly controlled life conditions.

The study is a complex experiment in human learning, discovering a basis for accepting certain hypotheses and a lack of evidence for others. But, perhaps most important, the study provides a basis for challenging some of the stereotypes about Latin Americans--the very stereotypes that had appeared earlier in the series of ethno-pedagogical studies as reasonable and respectable assumptions.

Although the design is experimental, many of the findings are based on descriptive aspects of the study; the study not only tests hypotheses but also provides descriptive constructs about the interaction of learners in São Paulo with discovery and expository approaches to teaching and with the group and individual modes of learning environments. Hypotheses were tested and judgments about them were derived from empirical data. That the findings are mixed within certain hypotheses was a clear warning that one or more basic assumptions were askew or that there were flaws in the conceptual basis underlying the hypotheses. Mixed findings from data in a carefully designed and executed experiment are just the sort of clue needed to seek out stowaway stereotypes.

The study experimentally modified an instructional experience in such a way as to make it more "culturally attuned" to the pedagogical expectations and characteristic learning styles of semi-literate São Paulo residents with little or no formal education. The vehicle of the experiment was programmed instruction--widely used in experimental studies of instructional variables because it assures less random variability than teacher-led instruction. The relative effectiveness of group-mode learning was tested against individual-mode learning; an expository instructional presentation was tested against a discovery-learning approach. The hypotheses proposed that the subjects of this experiment would learn more effectively through a group-mode expository instructional experience. Assuming that Latin Americans, in general, are acculturated to learn in largely rote methods and assuming that they are more gregarious and communal-cooperative than independent-competitive, the experimental data should have consistently supported these hypotheses. But the findings were mixed: strong support for the hypotheses came from some cases, convincing evidence for refuting the hypotheses came from others. Clearly, something was wrong with the assumptions.

The study had begun, innocently, with a stereotype. The contradictory findings forced a reconsideration of the assumptions and refutation of the stereotype. Although there is evidence that formal schooling had served to make some of these São Paulo residents less able to learn effectively in discovery modes, the others--especially those less affected by formal education--learned effectively through discovery experiences. More important, discovery learning experiences provided for the relatively under-educated Brazilian sample, the same long-term advantage, in terms of continued effective use of new learnings that has been observed among highly educated North American samples. The findings do not support the view that Latin Americans are, in general, acculturated to be "rote learners."

The study is not intended as a promotion or advocacy of programmed instruction within non-formal education. In the research, programmed instruction serves as a vehicle for the experimental modes of teaching; in effect, it represents a carefully controlled teacher's presentation. The widespread use of programmed instruction may or may not be a good idea in Brazil; that question was not a major issue for this study. But it is important to note that in the context of this particular experience, at least, programmed instruction stood well the test of learning effectiveness. (This finding could be of some encouragement to Brazil's Ministry of Education and Culture, with special reference to their new PI-based program for out-of-school youth in São Paulo.)

To some degree, schooling seems to be a culprit in the findings of this research. Group use of discovery-mode learning was found to be more effective with traditional learners; the less schooling subjects had had the more likely the discovery mode was to lead to effective learning. Since effective learning was described as including the likelihood of use of the learning (as revealed in the delayed post-test) one might conclude that schooling produced some sort of deleterious effect. But the cause-effect relationship is not established by this study. In fact, even if the possible inference were substantiated, one might still argue that the many desirable effects of schooling--even a rote-learning type schooling, outweigh the damage that it may do. It is important to recall Goodnow's African studies (in the Piaget tradition) that show that without schooling, learners rarely get out of the "concrete operations" stage. Certainly, then, the findings reported here would be misused as an argument against formal education.

The Experiment in São Paulo: Its Conceptual Base

Educational technology is crossing cultures. Programmed instruction(PI), for example--a teaching method which began to make an impact on North American education in the late 1950's--has rapidly spread beyond national boundaries. "The rapidity of its spread may well have made P.I. the most swiftly disseminated innovation in the history of education."[3] Educational journals have reported the use of PI in such diverse areas of the world as Western Europe, the Soviet

BEST COPY AVAILABLE

bloc, Israel, the Arab states, West and Central Africa, Asia, and South America. Spaulding,[4] in an introduction to UNESCO's directory of PI activities in 65 countries, calls the international expression of interest in programmed instruction "explosive."[5] Similarly, Stolurow comments that

> . . . while PI began in the United States, it is probably enjoying a more flourishing development in other countries at the present time. They seem to have taken the results of early work more seriously than has the United States and have moved more rapidly toward the institutionalization of instructional technology within their educational and training establishments.[6]

The introduction of a teaching innovation--such as PI--into the education arena is an international effort linking teachers, learners, and cultures. The educator brings his own educational experiences and expectations to bear upon instructional tasks. In the process of implementing educational programs, he introduces innovations to learners in receiving cultures. The teaching methods thus introduced are components of the instructional system in which they have evolved. As such, the methods are usually attuned to their original milieu. They are likely to be less attuned to teachers and learners in a target culture. Adaptations of novel methods to the receiving culture will probably be necessary if effective learning is to occur.

Ethnopedagogical Inquiries

A series of investigations into the problem of attuning teaching to culture is being conducted by Ward and others. These inquiries into learning effectiveness are seeking to gather more precise information about culture-based variables in instructional systems which demand modifications of teaching procedures and transformations of instructional materials.[7]

This series of investigations falls within a conceptual framework which Burger has called "ethno-pedagogy."[8] The essence of ethnopedagogical theory is that demonstrated cultural differences among learners demand attunements of teaching. Those cultural attunements of teaching which are likely to contribute to effective learning must be identified, implemented, and evaluated. Ethnopedagogical

BEST COPY AVAILABLE

investigations methodically gather data regarding learners in target cultures and the milieux in which these learners function. From these data, incongruities between cultures and teaching are identified, and suggested modifications in instructional systems are extrapolated. Hypothetical improvements in instruction are submitted to empirical testing to determine whether or not the suggested adaptations of teaching do indeed increase the effectiveness of learning within the target culture.

A Brazilian Investigation

A recent investigation in Brazil formed a link in the series of ethnopedagogical inquiries described above.[9] The research focused upon two dimensions of the problem of attuning PI to learners in a specific Brazilian milieu: (1) the dimension of instructional interaction--whether or not group conditions (in contrast with individualized conditions) of instruction will facilitate learning through PI; and (2) the dimension of program style--whether or not the use of a discovery program style (in contrast with the more common expository program style) will facilitate learning through PI.

In discussing the first of the above dimensions (the attunement of instructional interaction to cultures) Burger sees individually prescribed instruction as possibly inappropriate in non-Anglo cultures:

> We do not say that it [individually prescribed instruction] is good or bad for Yankees, but merely that it does not necessarily fit the far more sociable patterns that are normal in non-Anglo cultures. . . . . It is Anglo culture that spins off the already asocial Yankee into a lonely pupil sitting at an isolated carrel and talking to the lifeless computer. I find it entirely feasible that the same cybernetic system could be designed for more communal activity.[10]

Kress concludes from six North American studies of social interaction and PI that "individual pacing and privacy may not be essential for effective programmed learning . . . the results . . . lead to speculations that social interaction may actually facilitate programmed learning."[11] Summarizing research carried on in England, Amaria, Biran, and Leith came to a less guarded conclusion:

> . . . The notion of programmed learning as an exclusively individual process may be abandoned. Cooperative work has been shown to be fully as effective as individual work and to take no longer. Whatever the additional benefits of social interaction may be, they need not be eschewed if programmed learning is adopted as a teaching method.[12]

It may well be that the "additional benefits of social interaction" in non-Anglo cultures are even greater than those already observed in the United States and England. At any rate, an investigation of the question of facilitating PI in non-Anglo cultures through group interaction appeared to be warranted in the Brazilian research.

In the area of concern defined by the second dimension of the research problem, expository versus discovery teaching, anthropologists and educators have noted varying cultural patterns. As early as 1938, Fortes observed that the Tallensi rarely ask questions looking for reasons.[13] They demonstrate much more curiosity about methods than about underlying principles. Hall considers the extent to which rote learning is used as an important educational variable among cultures.[14] Bruner recognizes that discovery methods of teaching take for granted "middle-class hidden curricula" through which children learn motivation toward subject matter expertise and thinking skills necessary to use the mind in intellectual ways.[15] He admits that these assumptions about motivation and cognitive skills are questionable within certain American sub-cultures. Discovery teaching assumptions may be even more out of harmony with the "hidden curricula" of learners in cultures where expository methods are the teaching norm. An investigation of the relative effectiveness of cultural adaptations of PI in expository and discovery directions seemed to be both timely and relevant as a focus for the Brazilian investigation.

Questions and Hypotheses

A concern for attuning teaching (such as PI) to a culture (such as Brazil) along specific (individualized-group and expository-discovery) dimensions gave rise to a series of research questions: Does programmed instruction teach in a Brazilian milieu? Will the method be equally effective for all learners, or will characteristics

BEST COPY AVAILABLE

such as school success, modernity, and motivation affect the degree to which PI facilitates learning? What kinds of adaptations of PI increase the effectiveness of the method for Brazilian learners? Will learners achieve more studying alone, or in small groups? Will they achieve more through discovery methods or through expository methods? Are attunements of PI equally important to all learners, or will some learners benefit more than others from efforts to attune teaching to their culture?

It was hypothesized that (1) learning occurs through PI in a Brazilian milieu; (2) PI conditions differ (along individualized-group and expository-discovery dimensions) in their relative effectiveness as facilitators of learning; (3) the school success of learners affects the degree to which PI (under all treatment conditions) facilitates learning; (4) the modernity of learners affects the degree to which PI (under all treatment conditions) facilitates learning; (5) motivation to learn affects the degree to which PI (under all treatment conditions) facilitates learning; (6) cultural attunements of PI are relatively more productive for learners who have experienced less school success than for those who have experienced more school success; (7) cultural attunements of PI are relatively more productive for traditional learners than for modern learners; and (8) cultural attunements of PI are relatively more productive for less motivated learners than for more motivated learners.

The first hypothesis, that learning occurs through programmed instruction, had been overwhelmingly supported by previous research. Students do learn from PI:

> . . . They learn from linear programs, from branching programs built on the Skinnerian model, from scrambled books of the Crowder type, from Pressey review tests with immediate knowledge of results, from programs on machines or programs in texts. Many kinds of students learn--college, high school, secondary, primary, preschool, adult, professional, skilled labor, clerical employees, military, deaf, retarded, imprisoned--every kind of student that programs have been tried on. Using programs, these students are able to learn mathematics and science at different levels,

> foreign languages, English language correctness, the details of the U.S. Constitution, spelling, electronics, computer science, psychology, statistics, business skills, reading skills, instrument flying rules, and many other subjects. The limits of the topics which can be studied efficiently by means of programs are not yet known.[16]

It seemed reasonable that learning through PI would also occur in a Brazilian milieu. Hypothesis 1 was to be tested to discover whether or not learning does indeed take place.

The second hypothesis, that treatment conditions differ along dimensions of cultural attunement in their relative effectiveness as facilitators of learning, grew out of ethnopedagogical theory. A basic assumption of ethnopedagogy is that adjusting educational practice in the direction of cultural attunement will increase learning. Students of culture have observed the group-oriented nature of Latin societies.[17] They have also observed the prevalence of guided, deductive, didactic teaching with Latin cultures.[18] Since the cultural variables under consideration, individualized-group interaction and expository-discovery teaching styles, were also considered to be important teaching variables, adjustments of programmed instruction along such dimensions in the direction of cultural attunements were expected to facilitate learning. Hypothesis 2 was to be tested to determine whether or not such a phenomenon does indeed occur.

Hypothesis 3 suggested that the school success of students, operationalized in terms of years of schooling and scores on an intelligence measure, was expected to be related to learning outcomes. North American studies have shown high correlations between scores on IQ measures and achievement through PI.[19] It seemed reasonable to suggest that similar relationships would be found in the Brazilian milieu. Hypothesis 3 was to be tested to determine to what degree such relationships exist.

Hypothesis 4 stated that differences among learners within a culture on modernity variables such as type of schooling, social status, urbanity, attitudinal modernity and media exposure were also expected to relate to effective learning through PI. Three lines of reasoning undergirded this prediction. The first was based on what could be called a principle of learner similarity: when a teaching method developed in one culture is introduced to another culture, it is most likely to be effective with learners who have characteristics similar to those in the first culture, and least likely to be effective with learners who differ from those in the first culture in some important way. If this premise is correct, it would logically follow that PI, which has developed in a modern, technological milieu, would be most effective with learners in another milieu who are similar to learners for whom and with whom the method was developed (i.e., modern learners).

The hypothesis that modernity is related to the effectiveness of PI was also deduced through a second line of reasoning based on a principle of pedagogical familiarity: the degree to which the method employed fits the previous experience and expectation patterns of the learner will influence the response of the learner to the teaching method. A method which includes familiar components should elicit a more favorable response than a method which contains novel components. The components of PI methodology are modern in their origin. Thus they seemed likely to be better received, at least initially, by modern learners, for whom they were more familiar, than by traditional learners, for whom the components of PI were less familiar.

A third line of reasoning also led to the hypothesis that modern persons would learn more through PI than traditional persons. When PI is introduced into a culture, it constitutes an innovation, a new idea. Innovators and early adopters of innovations have shown higher scores on certain modernity measures than those who are slower to adopt innovations.[20] It follows that modern (more innovative) learners will accept a teaching innovation (PI) more readily than will traditional (less innovative) learners. Carrying this kind of logic another step, it seems reasonable to suggest that modern learners, who are more likely to accept PI, are also more likely to learn through the method than are those traditional learners who resist it. Hypothesis 4 was to be tested to explore relationships between the modernity of learners and the effectiveness of PI as a facilitator of learning.

Hypothesis 5 suggested that motivation to learn (measured by age, sex, and community participation) would be related to effective learning through PI. Interest in the subject matter (nutrition) was expected to be greater on the part of women than of men, for the obvious reasons that women more often plan and prepare meals and are concerned for the health and well being of their husbands and children. Older people were expected to be more interested in the subject matter than younger people for similar reasons involving family responsibility and concern about personal health which tends to increase with aging. Community participation on the part of learners was expected to relate to achievement through PI, particularly when, as is the case in several instances in the present research, PI takes place within a cohesive community structure. When a strong *esprit de corps* exists, the effectiveness of PI as a facilitator of learning should be enhanced. Hypothesis 5 was to explore the extent to which motivation to learn is related to the effectiveness of learning through PI.

The essence of Hypotheses 6, 7, and 8 was that the cultural attunement of PI is more essential to learning for some learners than it is for others. The hypotheses stated that cultural attunements of PI are relatively more productive for learners who have had less school success, who are less modern, and are less motivated to learn. Highly successful, modern and motivated learners learn in spite of materials and methods which are poorly attuned to their culture. Their ability, interest, and exposure to modern ways help them to bridge the gap between the pedagogy and the culture. Less successful, less modern and less motivated learners cannot bridge the cultural gaps as well. Hence the cultural attunement of PI was expected to be relatively more productive for this latter group of learners than for the former.

Design of the Research

The design for the research called for a four-cell participant-observer demonstration with repeated measures and four replications. It can be represented symbolically as follows:

$$\begin{array}{cccc} 0 & Xa_1 & 0 & 0 \\ \hdashline 0 & Xa_2 & 0 & 0 \\ \hdashline 0 & Xb_1 & 0 & 0 \\ \hdashline 0 & Xb_2 & 0 & 0 \\ \hdashline \end{array}$$

where 0 represents pretesting, posttesting, and delayed posttesting, X represents treatments, a and b represent treatment conditions along a program style dimension, and 1 and 2 represent treatment conditions along an instructional interaction dimension. The symbols a_1, a_2, b_1, b_2 indicate combinations of conditions to be employed in treatments in a 2 x 2 factorial design. Dotted lines separating treatments indicate that intact groups are involved. Treatments were to be replicated four times, so that a total of sixteen intact groups would be included in the study.

Subjects

The subjects in the study were 145 youths and adults who reside in the metropolitan area of São Paulo, Brazil. They were voluntary participants in a three-session course on nutrition given at sixteen testing sites throughout Greater São Paulo. Their ages ranged from 14 to 75 years. Seventy percent were women. Only 15 percent studied beyond primary school. At least half reported very traditional school experiences (such as standing for recitations). Eighty-three percent were employed in manual occupations or are from homes where the chief breadwinner is employed in a manual occupation. Three-fourths of the subjects resided in urban centers of 10,000 or more when they were ten years old. Fifty-five percent lived in states other than São Paulo. Forty-two percent of the subjects migrated to São Paulo within the last nine years. Seventy-two percent attended church at least once a week.

Test Sites

The sixteen test sites at which research was conducted were in São Paulo. Eight were in the south zone of the city, four were in the west, three were in the north, and one was in the east. Twelve of the groups were church-related, and four were in a state-sponsored literacy school. Of the church-related groups, half were intact, ongoing women's organizations which were accustomed to meeting regularly, and half were *ad hoc* groups created with volunteers enlisted through publicity in the local community. An attempt was made, within the context of existing linkages, to select groups which were as diverse as possible from each other in terms of geographical area of the city, SES, religious affiliation, and motives for participation in the course.

Initial arrangements at test sites depended heavily upon good human relations and the credibility of the investigator with persons contacted. Key persons at each site needed to become sufficiently convinced of the value of the project to become active recruiters of students for the *cursinho*.[21] These persons were then trained to serve as coordinators of local arrangements. Often the investigator or a teacher was asked to attend community meetings to present and publicize plans for the *cursinho*. Follow-up contacts were usually necessary to verify that arrangements had been made. An average of five contacts by the investigator or by a teacher was necessary at each of the sixteen sites to complete these initial arrangements.

Teacher-Assistants

The obtrusive effect of a foreign investigator's presence at test sites was lessened by the leadership of national teachers. Findings were enriched by the contributions, insights, and awareness of cultural nuances of these competent national persons. Their enlightenment of the investigator throughout the planning, execution and evaluation stages of the research was a significant part of the investigative process.

The three teacher-assistants participating in this research were students at the Faculdade Teologica Batista de São Paulo. They had been recommended by faculty members at their institution as being persons qualified for a research-assistant role. Each was in the fourth year of university-level work. Two were men and one was a woman. Two were education majors; the third had completed three courses in education. Two had had course work in the scientific method and probability theory. All were experienced teachers of adults in non-formal settings.

These teacher-assistants received both financial remuneration and course credit in return for their participation in classroom training sessions and data gathering activities at test sites.

Teacher-assistants were trained through weekly three-hour training sessions, beginning five weeks before the first data were gathered, and continuing to the end of field work. Activities during these sessions included: (1) discussion of relevant research, educational, and sociological theory; (2) a detailed study of the design of the research in which they were participating (including the research problem, hypotheses, assumptions, variables, instruments, procedures, and analyses of data); (3) practice in interviewing, administering tests, and other data gathering procedures; (4) coordination of schedules and arrangements being made at test sites; (5) evaluation of field work at test sites; (6) discussion of preliminary findings and their implications; and (7) discussion of research problems and decisions.

Assignment of teachers to test sites was made in such a way that all teachers participated equally in all treatment conditions. Such assignment was randomized as far as was practicable.

At least one teacher-assistant and the investigator shared data gathering activities at each test site. These activities included distributing and collecting materials, giving initial instructions in using PI, leading students from one activity to another, giving oral pretests and posttests, and interviewing. The presence of the investigator at all test sites enabled certain teacher-generated errors and fluctuations in procedures to be observed and corrected, and provided an on-the-job extension of classroom training.

Programmed Instruction Unit

Two programmed versions of a basic nutrition unit[22] were varied systematically along three dimensions of expository-discovery teaching described by Shulman: (1) the degree of guidance provided, (2) the *ruleg* or *egrule* sequencing of instruction, and (3) the didactic or Socratic style of instruction.[23]

Degree of Guidance.--In the expository condition, the learners' behavior was more controlled, and convergent responses were reinforced. In the discovery condition, the student was given more freedom. Divergent responses were encouraged.

Sequence of Instruction.--The expository program was more often *ruleg*, proceeding deductively from rules to examples. The discovery program was more often *egrule*; the student was given examples and encouraged to find the rules himself.

Didactic-Socratic Dimension.--In the discovery program, a Socratic teaching style created successive states of equilibrium and disequilibrium as problems were raised, tensions created, solutions formed, out of which new problems are raised. This style was contrasted with didactic teaching in which the student makes smooth progress through carefully planned, small instructional steps.

At the same time the programs were being varied along the above dimensions, an attempt was made to control and equate (1) the content, (2) the meaningfulness, and (3) the reading difficulty of the two versions.

The content was controlled on all dimensions except the thinking or cognitive behaviors required of the students (the latter vary systematically as the teaching styles are varied). The same instructional objectives, facts, concepts, principles, and illustrations were used in both versions of the program.

Equal meaningfulness was sought for both versions of the unit. Teaching methods which encouraged rote learning were avoided. Every effort was made to contrast meaningful expository teaching with meaningful discovery teaching.

Equivalence of reading difficulty between the two versions of the unit was estimated by an analysis of 100-word passages selected from the beginning, middle, and end of each programmed lesson. The average number of sentences per 100 words was 12.5 for the expository version and 12.8 for the discovery version. The overall frequency of unfamiliar words[24] was 1.6 per 100 words in the expository unit, and 2.5 per hundred words in the discovery unit. Since Portuguese reading difficulty scales were not available, absolute grade levels or difficulty levels could not be determined from these data. On an English-language scale[25] the reading level of the expository program was second grade, first month, and for the discovery program second grade, second month. On a Spanish reading difficulty scale developed by Spaulding,[26] the expository unit had an overall score of 49 and the discovery unit an overall score of 51. Readings falling between 40 and 60 on the Spaulding scale are considered "very easy, offering maximum comprehension for the new reader."[27]

Procedures in Writing.--The following methodology was developed for writing the expository and discovery versions of the nutrition unit: (1) using a Gagne-type task analysis,[28] behavioral objectives were determined for the unit, and for each lesson within the unit; (2) from these objectives, the basic concepts and principles to be taught were derived; (3) a rough draft of a "free-style" program was developed, representing a direct route to the objectives by way of PI, and giving little attention to the expository or discovery nature of the sequences. (The emphasis here was on capturing a natural teaching style. The stylistic components of instruction tend to become stilted in attempts to write on the two extremes); (4) two non-programmed lesson plans were outlined as models of expository and discovery teaching. The question at this point was, "How would an experienced teacher reach these goals via the two methods?"; (5) using the expository lesson plan in [4] as base, the free-style program was adjusted in an expository direction [since PI units developed from task analyses tend to be quite expository in nature, the adjustment in this direction was minimal]; (6) the teaching methods from the discovery lesson plan [4, above] were used to adjust the program in a discovery direction; (7) a systematic analysis of the two versions of the program was made (a) to determine whether or not the teaching methods in the two versions did indeed differ in their degrees of guidance, *ruleg* or *egrule* sequencing, and didactic or Socratic style, and (b) to determine whether or not the same instructional objectives, principles, concepts, facts, and illustrations were included in both programs. The two versions of the unit were cross-referenced frame by frame so that subtle similarities and differences between them could be compared and controlled. This cross-referencing method of comparison enabled rather precise assessments of the content included and the pedagogy employed in each version of the unit.

Cooperation in Writing.--Cooperation was sought in writing the PI unit to verify the accuracy of the nutrition information offered, and to assist in attunements of the materials to the language and culture of the target group. To establish the accuracy of the nutrition information in the unit, standard current nutrition texts and a professional nutritionist were consulted. A Brazilian professor of adult education helped to maximize the linguistic and cultural attunement of the materials.

Individual Testing.--During the individual phase of the testing of materials, each programmed lesson was taught to three or four different informants, one at a time, in a private, across-the-table setting. The informants read frames aloud and made overt responses. Insights into the thinking processes of the students were provided through verbal and non-verbal behavioral cues. The investigator augmented the information she gleaned by asking probing questions (such as, "What are you thinking?"). She made on-the-spot improvements in the program while the student was responding by adding written prompts to the frames, or breaking down the instruction into smaller steps. Observations and impressions were both hand and tape recorded. The resulting information furnished the basis for the first revision of the lessons.

Group Testing.--The revised lessons were tested a second time under group conditions which simulated as closely as possible the actual field setting in which they were to be used. Groups of four or five students worked alone or in teams, completing the lessons without teacher help. An item analysis of each student's response to each frame supplied the basis for the final revision of the PI lessons.

Production.--The final version of the programmed unit was mimeographed, one frame to a page. Large type, ample spacing, and a careful layout of frames were employed to maximize readability. Each lesson was collated as a separate booklet. The format and appearance of the expository and discovery versions of the lessons were identical except for the color of the covers.[29]

Instruments[30]

Questionnaires.--Three questionnaires were used in the research. Questionnaire A was designed to gather data on certain demographic, sociological, and personal characteristics of learners. It was administered orally and individually during the second treatment session by the investigator or a teacher-assistant. Some of the items in Questionnaire A had been used in previous investigations in a Brazilian milieu by Herzog[31] and Kahl.[32] Other items were developed specifically for the present research. From responses to items in this questionnaire, information was provided concerning each subject's sex, age, years of schooling, type of school experience (along a traditional-modern dimension), occupation, previous residence (when ten years old), length of present residence in São Paulo, and degree of community participation (church attendance).

Questionnaire B attempted to measure individual modernity, or a composite of attitudes, beliefs, and behaviors characteristic of persons in highly urbanized, industrialized, and literate societies.[33] After considerable deliberation, an adaptation[34] of the Smith-Inkeles Minimum Scale of Individual Modernity, Short Forms 5 and 6 was selected as a modernity measure in the present research.[35] The primary reason for the choice was the broad application and good validation of the instrument.[36]

Questionnaire C was administered during the last treatment session. Five items explored the student's history of exposure to nutrition information from other sources (radio, television, literature, conversations, other meetings) during the time period of the study. Two items inquired into the means of transportation to the class sessions, and the length of travel time required. One item explored the possibility of previous exposure to programmed instruction methodology on the part of the student. The last item, a dependent variable measure, asked the student if he worked alone or with other persons on home assignments.

Otis Mental Ability Test (Beta Level, Short Form).--A score on a group intelligence test was one of the literacy-related measures used in this research.

> The Otis test utilized is an equivalent form of (the Northamerican Beta level test). The test was validated by the criterion of school success, and (shows) a high correlation with other tests of general intelligence. It was chosen (for the present research) because of (facility of) application (in group settings) and facility of manual correction. In Brazil, various forms of the test have been used in educational . . . and industrial sectors.[37]

Although the Otis instrument is less precise than most of the complex and individually administered tests, it affords a "satisfactory rough

BEST COPY AVAILABLE

classification . . . (which) can be used with advantage . . . to segregate pupils into relatively homogeneous groups for . . . research purposes."[38] For subjects in the present research, the correlation of the Otis test with years of schooling was .55; correlations with measures of content acquisition, transfer of training and retention of learning were in the .400 range.

Exercise 1.--Exercise 1 was a criterion measure based on the instructional objectives of Lesson 1 in the nutrition unit. The exercise included eight sentences, each of which is completed with the food group to which a given food belongs. Two examples of sentences from this exercise are: "Chicken belongs to the group of foods which build." "Pudding belongs to the group of foods with milk."

Exercise 2.--This exercise was also a criterion measure. It was based on the instructional objectives of Lesson 2 of the nutrition unit. Students were asked to supply correct numbers in the following sentence:

"Every day,
adults need to eat:
foods with milk ______times;
foods that build _____times;
foods that protect ____times;
foods that give energy _____times."

Planejando Uma Dieta: Written Pretest-Posttest-Delayed Posttest.--This problem-solving task, Planning A Diet, was a repeated measure. Students were given a sheet of paper on which is printed a list of 38 foods and the following instructions:

> Here is a list of foods. If you want to have an adequate diet, what foods will you eat tomorrow? You may make 13 choices from these foods. Write them one by one in the blank spaces in the order (you choose them).[39] Remember that you want good nutrition. Don't rush. Plan you diet well. When you finish, take your list to the teacher.[40]

Oral Pretest-Posttest-Delayed Posttest.--Immediately after planning his diet (above) the student was asked to give reasons for one of his choices. He is questioned in a private setting. The interviewer first selected a frequently-chosen food which appeared on the interviewee's list. The interviewer then recorded (in writing) the interviewee's responses to three questions:

"Can you show me where you wrote (food), please, so that I can check your choice on this paper?"

"Why did you choose (food)?"

"Are there other reasons why you chose (food)?"

Attendance Form.--A form was provided for marking the student's presence at sessions, or giving reasons for his absence.

Instrument for Choosing PI or a Story Method.--During the last treatment session, the student was given a choice between PI and a story. In a private interview setting, the student was shown two booklets with identical covers, formats, color, and size. The interviewer said,

> We would like to give you a copy of Lesson 4 so that you can teach a friend. You may choose between two styles. One is programmed instruction, just like you studied in this course. The other says the same things, but is written like a story. Both of the books have the same teachings. The only difference is that one is a story (shows book) and the other is programmed instruction (shows book) like you just finished studying. Which of the two would you think it best to take, the programmed instruction or the story?[41]

The student's choice of a teaching method was recorded.

Data Gathering

Data were gathered through three visits to each of the sixteen test sites. During the first session, the students were given written and oral pretests, instructions for using programmed texts,[42] Lesson 1 (a PI booklet), Exercise 1 (a criterion measure), and Lesson 2 for homework. During the second session, the students completed Exercise 2 (criterion measure), Lesson 3, and written and oral posttests. They were given Lesson 4 for homework.[43] Data on demographic and personal characteristics of the students were also gathered during the second session (through Questionnaires A and B). During the third session, students were given written and oral retention tests (delayed post-tests), an opportunity to choose between a programmed text and a lesson in story form, a post-treatment questionnaire (Questionnaire C), and an intelligence measure (Otis, Short Form, Beta Level). Certificates for completion of the course were distributed.

Variables

Cronbach,[44] Shulman,[45] and others have suggested that research on teaching should provide for repeated and multiple measures whenever possible, so that learning strategies, affective responses, and longer term effects of teaching can be observed alongside the more usual measures of immediate learnings and content acquisition.

In keeping with these methodological suggestions, the present investigation considered a variety of learner characteristics (independent variables) and learning outcomes (dependent variables). Table 1 summarizes independent, dependent, and treatment variables considered in the research. Independent variables included school success, modernity, and motivation. Dependent variables included content acquisition, transfer of training, retention of learning, strategies employed in learning, and affective responses to instruction. Treatment variables included individualized-group and expository-discovery dimensions of programmed instruction (PI).

Tables 2, 3, and 4 provide more detailed descriptions of measures of independent variables employed in the research. Measures of school success (IQ Score and Years of Schooling) are described in Table 2. Measures of modernity (Kind of Schooling, Urbanity of Previous Residence, Region of Previous Residence, Stability of Residence in São Paulo, Occupational Status, Attitudinal Modernity, and Media Exposure) are described in Table 3. Measures of motivation (Sex, Age, and Community Participation) are described in Table 4.

BEST COPY AVAILABLE

Tables 5, 6, and 7 provide detailed descriptions of measures of dependent variables employed in the research. Table 5 describes measures of acquisition of content, transfer of training and retention of learning (Exercise 1, Exercise 2, Balance of Diet, Variety of Diet, and Unprompted Recall). Table 6 describes measures of strategies employed in completing programmed instruction units (Accuracy of Responses, Copying Feedback, Stability of Responses, and Time Required) and in the pretest-posttest-delayed posttest ("Pop" Choices, Shifting Focus, HI-HI-LO-LO Pattern, 1-2/3-4 Pattern, Wild Choices and Added Course Reasons). Table 7 describes measures of affective responses to instruction (Pleasure Reasons for Food Choices, Choosing PI instead of a Story, Conversations about Course, Completeness of Programmed Lessons, Working Alone or with Others, and Attendance at Sessions).

Treatment variables in the research included (1) an expository or discovery style of PI and (2) an individualized or group condition of instructional interaction in PI. The treatments were combined in a 2 x 2 factorial design as follows:

	Ind	Grp
Exp	X X X X	X X X X
Dis	X X X X	X X X X

Where *Ind* represents the individualized treatment, *Grp* represents the group treatment, *Exp* the expository treatment, *Dis* the discovery treatment, and *X* individual cases (sixteen intact groups) randomly assigned to one of four treatment conditions.

BEST COPY AVAILABLE

In the Ind-Exp cell, an expository (more guided, more deductive, more didactic) programmed unit was used. Students studied alone. In the Grp-Exp cell, the expository programmed unit described above was also used, but the instructional interaction was multilateral, with members of the group interacting both with the program and among each other. In the Ind-Dis cell, the discovery (less guided, more inductive, more Socratic) programmed unit was combined with individualized interaction. In the Grp-Dis cell, the discovery program was combined with multilateral interaction involving both student-student and student-program relationships.

Analyses of Data

Analysis of variance was the primary statistical technique employed in the research. Simple and partial correlations were also used to study relationships between independent and dependent variables.

Intact groups at geographically separated testing sites were the unit of analysis. Analyses of variance were based upon sixteen cases (intact groups) distributed equally (4,4,4,4) or unequally (3,5,5,3) in four-cell designs. The small number of cases was problematic, reducing the likelihood of statistically significant findings. Since considerable interaction among subjects took place at each testing site, such a risk was an unavoidable alternative to serious violations of assumptions of independence of variances inherent in less conservative procedures.

To test Hypothesis 1--that learning occurs through PI in a Brazilian milieu--analyses of variance of the means of selected pretest and posttest measures were examined.

To test Hypothesis 2--that PI treatment conditions differ (along dimensions of cultural attunement) in their relative effectiveness as facilitators of learning--analyses of variance were performed on all dependent variable measures in a two-way factorial design with individualized-group treatments on one dimension, and expository-discovery program style on a second dimension.

To test Hypotheses 3, 4, and 5--that the school success, modernity, and motivation of learners affect the degree to which PI (under all treatment conditions) facilitates learning--simple and partial correlations among independent and dependent variables were ascertained.

To test Hypotheses 6, 7, and 8--that cultural attunements of PI are relatively more productive for learners who are less successful, less modern, and less motivated--two-way analyses of variance were computed for all dependent variables with levels of cultural attunement (expository-discovery or individualized-group treatments) on one dimension, and levels of school success, modernity, and motivation (as measured through selected independent variables) on a second dimension.

Findings

More than 1500 statistical analyses were performed on data related to this research.[46] Clearly a decision had to be made either to delimit the study or to report findings holistically. Since the design of this research was theoretically cohesive and the variables and measures employed were mutually ancillary, a decision was made to report findings holistically. Significant findings and recurring trends were collated and combined into generalized observations. Such an emphasis on breadth and scope was considered consistent with the exploratory nature of the research. Significance of findings was reported at the .05 level of probability. To avoid loss of potentially useful information, trends were also reported when they were consistent with theory, highly applicable to teaching, indicated useful directions for future research, and had an alpha level of at least .25.

Research findings are summarized in Tables 8 through 19. A summary of findings related to Hypothesis 1--that learning occurs through PI in a Brazilian milieu--is shown in Table 8. Analyses of selected measures supported the hypothesis. Such findings harmonized with Schram's[47] conclusion (based on early investigations of PI) that many kinds of students learn many kinds of subject matter through many kinds of programmed instruction. The present research extended the generalizability of earlier findings to another subject area (nutrition) and to other students (adults in Brazil).

A summary of findings related to Hypothesis 2a--that the group interaction condition (more culturally attuned) is more effective than the individualized interaction condition (less culturally attuned)--is shown in Table 9. The hypothesis was not supported. The findings were contradictory, and not statistically significant.

A probable explanation for the paucity of significant findings related to this hypothesis is that the contrast between the individualized and group treatment conditions was not sharp enough. Students were strongly urged to work alone in the individualized treatment, and to work together in the group treatment. However--in order to create a natural teaching environment (as well as to maximize participant observation within the constraints of treatments)--students were given considerable freedom to interact in natural ways. The result was a tendency (possibly growing out of formal school experiences) to prefer working alone in both treatments. Thus, even though students in the group treatment worked together relatively more than students in the individualized treatment, the "individualized" and "group" treatments actually compared varying degrees of individualized instruction rather than clearly contrasted individualized or group conditions of instruction.[48]

Another possible reason for sparse findings related to the above hypothesis is that the treatment effects were overwhelmed by interactions with characteristics of learners, such as modernity and motivation. Findings related to other hypotheses considered in this research (especially Hypotheses 7a and 8a) would admit such an explanation.

A summary of findings related to Hypothesis 2b--that the expository program condition (more culturally attuned) is more effective than the discovery program condition (less culturally attuned)--is shown in Table 10. Significant findings on measures of acquisition of content (Exercises 1 and 2) and strategies employed in learning (accuracy and completeness of programmed lessons, and time required to complete lessons) supported the hypothesis.

These significant findings become less convincing when interpreted in the light of trends and interactions which tended to support an alternate hypothesis that the discovery program condition is more effective. Analyses of several measures (Balance of Diet, HI-HI-LO-LO Pattern, and Added Course Reasons) revealed interactions in which students in the discovery treatment showed learning gains one week after instruction, while students in the expository treatment showed no learning gains during this period of time. Findings from analyses performed on other measures (Copying Feedback and Choosing PI instead of a Story) seemed to indicate that students in the discovery treatment were thinking more and were enjoying the instruction more.

Mixed findings lead to speculation that, while initial achievement may be greater in the expository treatment, more thinking and more permanent learning may occur in the discovery treatment. Previous research reviewed by Whittrock,[49] Tanner,[50] and Hermann[51] would support such a conclusion.

A summary of findings related to Hypothesis 3--that the school success of learners affects the degree to which PI (under all treatment conditions) facilitates learning--is shown in Table 11. The hypothesis was supported. The only exceptions to otherwise consistent findings were negative correlations between school success and (1) ability to plan a varied diet, (2) a tendency to choose PI instead of a story, and (3) a tendency to work alone rather than with others. Possible explanations for these inconsistencies are not difficult to surmise. Learners with greater school success could have planned less varied diets because they are better integrated into a traditional system of schooling which rewards convergent, repeated behaviors, rather than the divergent, flexible behaviors required in varying food choices on repeated tests. Learners with greater school success could have chosen a story rather than PI because they had already mastered the programmed lessons (or perhaps were bored with the lessons, finding them too easy). Learners with greater school success could have preferred working alone because they were more competent and confident. They did not need help from others, and became impatient with slower learners.

A summary of findings related to Hypothesis 4--that the modernity of learners affects the degree to which PI (under all treatment conditions) facilitates learning--is shown in Table 12. The hypothesis was partially supported. The evidence was scattered, and not always in the direction hypothesized.

Possible explanations for sparse and mixed findings are: (1) that the population considered in the study (semi-schooled youths and adults residing in São Paulo) was relatively homogeneous on modernity variables so that differential effects were too small to be observed; (2) that modernity variables are relatively independent factors which may be expected to relate to each other and to dependent variables in different ways in differing settings; (3) that modernity variables interact with expository-discovery and individualized-group treatments (findings related to Hypothesis 7 would admit such an explanation); (4) that more modern learners show symptoms of waning interest and motivation earlier than their more traditional counterparts (more inconsistencies were observed on the last lessons and delayed posttests); (5) that attitudinally modern learners are more sophisticated than traditional learners in their perceptions of course expectations, deciding, for example, to drop pretest reasons for food choices (which have a folkloric quality about them) in favor of course-based (more intellectual) reasons for choices; and (6) that on at least one measure (kind of school experience) factors other than modernity were being measured.[52]

A summary of findings related to Hypothesis 5--that motivation to learn affects the degree to which PI (under all treatment conditions) facilitates learning--is shown in Table 13. The hypothesis had limited but consistent support on measures of female sex and community participation. Mixed and inconclusive findings failed to support the hypothesis on measures of age.

The data partially supported Hypothesis 5--that motivation to learn affects the degree to which PI (under all treatment conditions) facilitates learning--on measures of sex and community participation. Mixed and inconclusive findings failed to support the hypothesis on a measure of age. Younger learners appeared to be faster and more efficient than older learners (showing greater learning gains on measures of accuracy and stability of responses to programmed items, time required to complete programmed lessons, shifts in focus, and unplanned, HI-HI-LO-LO Pattern responses). On the other hand, older learners appeared to achieve more on oral measures of information and cognitive gains (unprompted recall of course information, and a tendency to add course-based reasons for food choices to earlier reasons given). These findings may indicate that older learners (when compared with younger learners) have developed greater skills in taking oral tests (perhaps through greater exposure to traditional kinds of school experiences in which oral recitations and examinations are practiced). The findings could also indicate that, since oral measures are less dependent upon literacy skills than are written measures, older learners, who tend to have more difficulty in reading and writing, have a better opportunity to demonstrate what they have learned orally than in writing.

A summary of findings related to Hypothesis 6a--that the group interaction condition (more culturally attuned) is relatively more productive for learners with less school success than for those with more school success--is shown in Table 14. The hypothesis was only partially supported. The evidence was contradictory and inconclusive, possibly because not all of the learning which occurs in groups is desirable learning! Less successful learners--when compared with more successful learners--showed a greater tendency to learn desirable behaviors through the group treatment (such as planning a balanced diet, making thoughtful choices of foods, and doing accurate and complete work on programmed lessons). On the other hand, these less successful learners were also relatively more prone to learn undesirable behaviors through the group treatment (such as copying feedback and shifting focus of attention).

A summary of findings relative to Hypothesis 6b--that the expository program condition (more productive for learners with less school success than for those with more school success--is shown in Table 15. The hypothesis was not supported. The findings were mixed and somewhat contradictory. The expository method was relatively more productive for learners with less school success than for those with more school success on several measures of learning (completeness and accuracy of programmed lessons, working with others, and choosing popular foods). At the same time, on other measures of learning (Stability of Responses, Copying Feedback, Unprompted Recall, Added Course Reasons) more thinking appears to be going on among less successful learners in the discovery method. Here again, as in earlier findings related to Hypothesis 2b, a pattern emerges which suggests that, at least when thoughtful behaviors are criteria for learning, discovery teaching may be more effective than expository teaching. Students who have been less successful in coping with traditional schooling appear to achieve relatively more through the discovery method on measures of thinking.

A summary of findings related to Hypothesis 7a--that the group interaction condition (more culturally attuned) is relatively more productive for traditional learners than for modern learners--is shown in Table 16. The hypothesis was supported. The fact that all significant findings and trends were in a single direction (the direction hypothesized) lends credence to an earlier suggestion that individualized-group treatments interact with characteristics of learners (in this case, with modernity).

A summary of findings related to Hypothesis 7b--that the expository program condition (more culturally attuned) is relatively more productive for traditional learners than for modern learners--is shown in Table 17. The hypothesis was not supported. Scattered but consistent evidence supported the alternate hypothesis.

A possible explanation for these unexpected findings is that more modern learners (who are better able to cope with the expectations of formal education) have successfully learned to learn through expository methods. They employ "meaningful reception learning"[53] in integrating new information into existing cognitive structures. Because of their success in learning through expository methods, they have little desire for change. Discovery teaching, with its many novel features, is perceived as a threat. On the other hand, less modern learners (who are less able to cope with the expectations of formal schooling) have been less successful in handling expository teaching methods; they resort to ineffective, rote strategies of learning. Discovery methods force these less modern learners to develop new (more thoughtful, and hence more effective) strategies. Thus less modern learners--when compared with more modern learners--find the discovery method relatively more productive.

A summary of findings related to Hypothesis 8a--that the group interaction condition (more culturally attuned) is relatively more productive for less motivated learners than for more motivated learners--is shown in Table 18. The hypothesis was not supported. Instead, the alternate hypothesis--that the individualized treatment is relatively more productive for less motivated learners--was supported on several measures.

Once again, as in data related to Hypothesis 7a, the findings provide evidence that individualized-group treatments interact with characteristics of learners, making certain conditions of instructional interaction more effective for some learners than for others.

The direction of the above findings--pointing toward relatively greater productivity of the individualized treatment with less motivated learners--is probably related to the particular measure of motivation employed in the analyses (community participation) rather than to a larger "motivation" construct. Logically, persons who are more active participants in a community activity would tend to develop greater skills in working with groups than would learners who are less active participants.

A summary of findings related to Hypothesis 8b--that the expository program condition (more culturally attuned) is relatively more productive for less motivated learners than for more motivated learners--is shown in Table 19. The hypothesis was partially supported, with some of the evidence supporting the alternate hypothesis. From the findings a profile emerged of less motivated learners who are frustrated, anxious, and uncomfortable in the discovery treatment (making relatively more mistakes on programmed lessons, feeling relatively more pressure from competition with peers and limitations on time, responding less favorably to the method than to a story method, and preferring to work alone). At the same time, these less motivated learners--when compared with their more motivated counterparts--are apparently thinking more and achieving more through the discovery method (gaining relatively higher scores on measures of balance and variety in planning a diet, giving relatively more stable answers to programmed items when time and peer pressures were removed [at home], copying relatively less feedback, showing relatively less tendency to shift focus of attention among food groups, and showing relatively less tendency to make thoughtless [wild] choices of foods).

The above findings are quite similar to those related to other hypotheses in which expository and discovery treatments were compared (Hypotheses 2b, 6b, and 7b). The discovery treatment--when compared with the expository treatment--appears to be relatively more productive for less schooled, less modern, and less motivated learners on measures of thoughtful behaviors and relatively permanent learning gains.

Conclusions

At least six conclusions may be drawn from the findings reported in the research:

1. *PI provides a promising tool for development education.* Subjects in the research adapted quickly to PI under all treatment conditions. The method was effective in teaching elementary principles of nutrition in adult basic education programs in Brazil. Overwhelming evidence that PI teaches (from both the present investigation and earlier investigations) leaves little room for doubt that similar efforts with similar students in similar cultures will meet with equal

success. The fear that programmed instruction--a method developed in North America--may be ineffective in other milieux seems to be poorly founded.

2. *While adaptations of PI in the direction of group methods are not contraindicated by findings from the present research, such adaptations are not equally beneficial for all learners.* Adaptations of PI in the direction of group methods appear to be relatively more productive for less modern and more motivated learners than for more modern and less motivated learners. A comparison of negative and inconclusive findings related to Hypotheses 2a (that the group interaction condition is more effective than the individualized condition) with quite consistent findings related to Hypotheses 7a and 8a (that the group interaction condition is relatively more productive for less modern and less motivated learners) supports such a conclusion.

3. *Adaptations of PI in the direction of discovery methods appear to be beneficial.* Although initial learning appears to be greater in the expository condition of PI, more thinking and more permanent learning seem to occur in the discovery condition. Findings related to hypotheses comparing expository and discovery treatments (H_{2b}, H_{6b}, H_{7b}, and H_{8b}) support such a conclusion.

4. *Highly successful, highly motivated learners achieve more through PI than less successful, less motivated learners, irrespective of cultural adaptations of the method.* Findings related to Hypotheses 3 and 5 supported conclusions that school success and motivation are related to achievement through PI. Contradictory and inconclusive findings failed to support Hypotheses 6 and 8, that cultural attunements of PI are relatively more productive for less successful, less motivated learners, than for more successful, more motivated learners. A comparison of the positive findings related to H_3 and H_5 with the negative findings related to H_6 and H_8 would suggest that the literacy skills and motivation of learners are relatively more important than cultural attunements of PI in predicting learning outcomes. More successful, more motivated learners appear to achieve more through PI than less successful, less motivated learners, regardless of efforts to adapt the method to the culture of the learners.[54]

BEST COPY AVAILABLE

5. *Adaptations of PI in the direction of group and discovery teaching methods are relatively more productive for traditional learners than for modern learners.* This conclusion is supported by a comparison of relatively inconclusive findings related to Hypothesis 4--that the modernity of learners affects the degree to which PI (under all treatment conditions) facilitates learning--with the consistent and quite conclusive findings related to Hypotheses 7a and 7b in which less modern learners--when compared with more modern learners--achieved relatively more through group and discovery treatments.

Interestingly, the interaction between modernity and expository-discovery treatments was not in the direction hypothesized. Hypothesis 7b stated that the expository program condition (more culturally attuned) would be relatively more productive for traditional learners than for modern learners; instead, the discovery program condition was found to be relatively more productive for these learners. Implications of this unexpected finding are discussed below.

6. *The conception of "cultural attunement" embedded in the rationale for hypotheses tested in the research must be reformulated* (1) to distinguish between "attunement" as a process and "attunement" as a product; and (2) to account for the complexity of factors involved in attuning teaching to culture.

Within the context of the present research, "attunement" has been treated as a process. An attempt has been made to adapt teaching to a Brazilian milieu along expository-discovery and individualized-group dimensions. Clearly a process is not the same as a product; attempting is not the same as achieving! Mixed and unexpected findings in the present investigation (for example, the discovery treatment, by definition less culturally attuned, and the group treatment, by definition more culturally attuned, were both more productive for less modern than for more modern learners) indicated that efforts to attune teaching to culture were not wholly successful. A true matching of teaching and culture (attunement as a product) is probably not attainable without an exhaustive awareness of complex factors involved in adapting teaching to culture (attunement as a process). An understanding of factors inherent in individual differences among learners appears to be especially crucial in adapting teaching to culture.[55] In other words, the present state of the development of ethnopedagogical theory is not adequate as a basis for highly reliable (predictable) attunement processes. Efforts to attune teaching methods to the cognitive characteristics, learning styles, pedagogical expectations, and preferences of learners should be carried out with due caution and humility!

The inadequacy of the present state of knowledge does not mean that attempts to attune teaching to culture are futile; on the contrary, such efforts provide indispensible data for developing cross-cultural teaching theory. Findings from the research reported here, for example, contributed to ethnopedagogical theory by revealing certain crucial factors along an "extent of schooling" dimension of learner variables which was overlooked in the formulation of hypotheses: (1) individual differences among learners in their ability to respond to school and non-school learning experiences; (2) the expectations of learners in school and non-school environments; and (3) individual preferences for teaching methods growing out of successful learning experiences within school and non-school environments. Further investigations within an ethnopedagogical framework may be expected to make similar contributions to cross-cultural teaching. Hopefully, an accumulation of such contributions will eventually make a true cultural attunement of instruction possible.

Implications for Teaching

Because the research was conducted in the field in a reality setting, the resultant findings have immediate and direct implications for teaching. Some of these implications are discussed below.

Implications for Programmed Instruction.--Experimental and observational findings from the research provided quite conclusive evidence that PI is an effective method for adult basic education in a Brazilian milieu.

Students in all treatments adapted quickly to the use of PI. Most comments, questions, and other observable reactions to PI were made within the first half-hour after the method was introduced. Beyond this initial period, students were accepting and behaving appropriately to the expectations of the method. An overheard conversation during the second session was typical: "The course is easier today." "That's because we've been practicing this method."

Analyses of variance of the over-all means on selected pretest-posttest-delayed posttest measures (shown in Table 20) resulted in highly significant F-ratios.

Recurring comments by students provided additional evidence that learning was taking place: "This course helps me do my grocery shopping"; "When I eat, I think about which foods belong to which groups"; "We are planning our menus at home around the four food groups"; and "I wish my daughter could take this course." (At least one student learned the lesson too well. Her comment in an oral interview was, "I eat enough fruit now, something I didn't do before." This same woman was given a low score on the written posttest because the diet she planned was badly overbalanced with fruits and vegetables!)

The above data suggest that educators may introduce PI as a method of adult basic education in Brazil (or in similar cultures) with reasonable confidence that learning will occur.

Certain problems in implementing PI were observed in the research. One of these problems was a strong tendency to copy feedback. In a typical incident, a student read a frame which asked him to choose a fruit he liked and write it in the blank. Instead, he carefully copied the feedback: "Your choice." (Happily, some of the students readily grasped the purpose of feedback. One woman said, "I made mistakes, but I didn't correct them. I wanted to check where I erred in order to learn.") Another persistent problem was that, at least at first, students perceived the programmed manuals to be tests, and were very concerned about careful handwriting and accurate work. High test anxiety was noted in comments such as "It's so easy, and I still forget." On the oral posttests, some students tried to remember what they had said earlier so that they would not repeat or contradict themselves. A third problem encountered was that many learners at this basic level found it hard to link reading with active responding. They would read an instruction such as "open the envelope inside the back cover," and ask, "Shall I open the envelope now, or go on reading?" These and other problems will need to be overcome if the maximum effectiveness of PI as a method of adult basic education is to be realized.

Implications for Group Interaction in PI.--Findings from the research did not contraindicate the use of PI in group modes. Group methods were shown to be at least as effective as individualized methods; they appear to be especially beneficial for less modern learners. On a key retention measure, for example, traditional learners achieved more in the group treatment while modern learners achieved more in the individualized treatment. This interaction is illustrated in Figure 1.

In spite of the demonstrated effectiveness of group methods of PI, an initial resistance to being required to work together was observed. In more cohesive groups, the resistance broke down rapidly. A strong *esprit de corps* evolved in which students helped each other, joked, and engaged in lively discussions and arguments. In less cohesive groups, work in teams was difficult to establish. Students became impatient with each other. The group treatment was least effective in a literacy school setting where students previously had been told by local teachers not to converse in the classroom. One younger woman at the literacy school asked, incredulously, "You mean you really want us to talk aloud to each other?" This student was obviously troubled by the conflict between her expectations regarding classroom behavior and the requirement of working with others. In these kinds of situations, group activity will need to be legitimized before the method can be used effectively.

Ample time was another crucial factor in implementing the group treatment. The condition did not function well when pressures

BEST COPY AVAILABLE

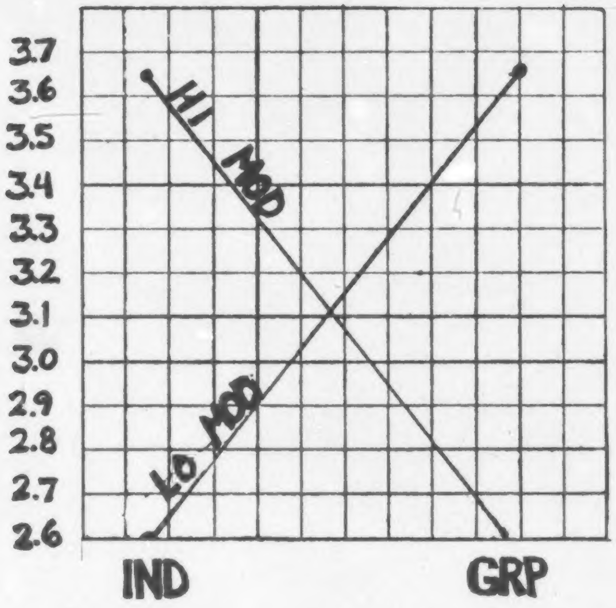


Figure 1.--Interactions between high (HI) and low (LO) modernity (MOD) and individualized (IND) and group (GRP) treatments on a delayed posttest measure of balance of diet.

were created by a late hour on a week night, or by a fixed class period in a school situation.

The group treatment worked best when teachers and the investigator maintained a low profile. If teachers were too readily available, there was a tendency to revert to teacher-led discussions.

Three roles developed within almost every group: (1) surrogate teachers, who became task leaders, explaining lessons and helping colleagues; (2) jokesters, the social leaders of the group whose constant jokes were rewarded with laughter and appreciation from their colleagues; and, (3) resistors, who wanted to work alone, sulked, argued, and were generally impatient and disagreeable.

The above observations lead to generalizations that group methods are effective for adult basic education in Brazil, but that group skills need to be taught. Unnecessary time pressures and competitiveness should be avoided. Efforts to introduce group conditions of interaction will be most successful in cohesive groups where a strong *esprit de corps* is present or can be created.

Observations of Responses to Expository-Discovery Methods.--Qualitatively different classroom climates were created by expository and discovery conditions of PI. The expository treatment sessions were characterized by mildly positive affective expressions. By comparison, the discovery treatment sessions were much more charged with emotion. The students in discovery treatments were alternatively excited, enjoying themselves, nervous, tense, anxious, arguing, and demonstrating feelings of frustration and hostility toward the method.

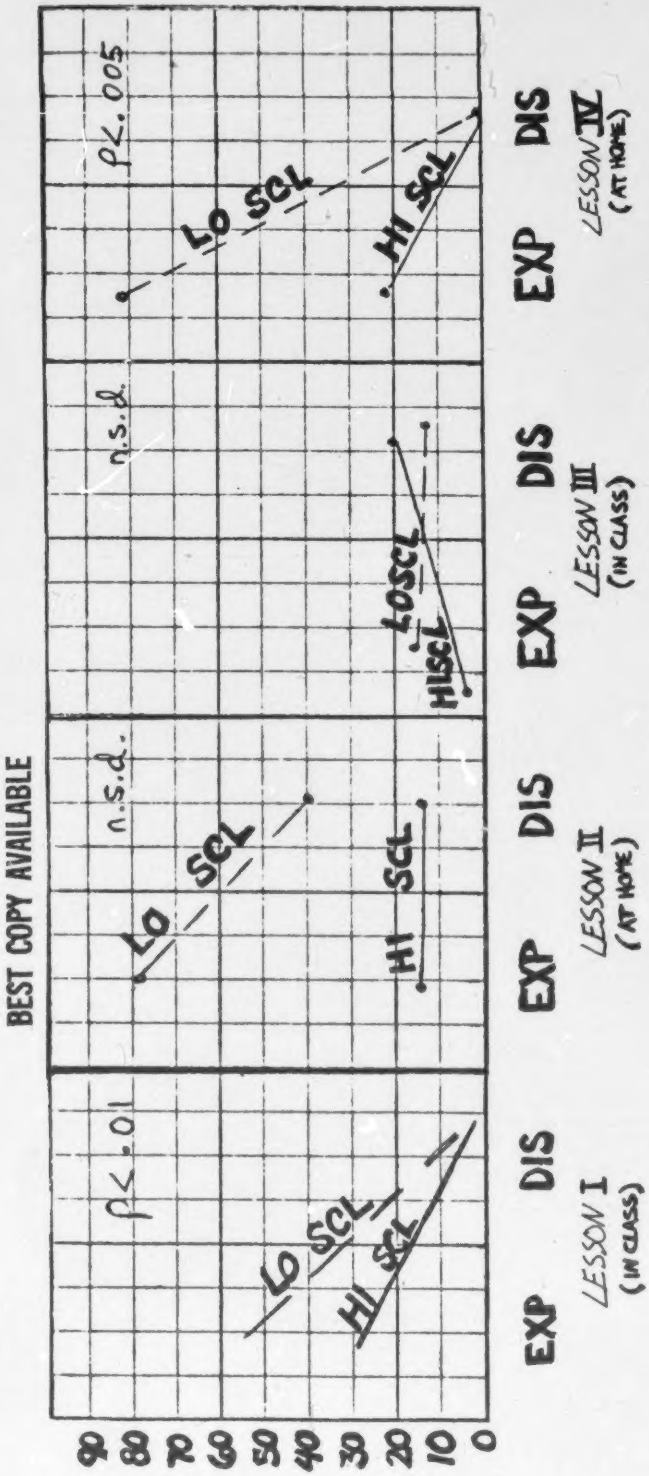
The students in expository treatment found the method easy to cope with. They did not need or want the eight frames of teacher guidance which were provided to introduce PI. They understood what was expected of them immediately, and worked independently, efficiently, and confidently. Students and teams competed among themselves to see who could finish the lesson first. They made few requests for teacher help.

In contrast, students in discovery treatments had difficulty in coping with requirements such as reaching generalizations inductively. They required more support from both their colleagues and the teachers. Frequent expressions of frustration at "Socratic" elements in the lessons were noted. For example, the first lesson called for organizing food cards into groups and preparing a food chart. As soon as this task was accomplished, students were asked to rescramble the cards. The reaction of one student to this requirement is typical: "The book must be joking. I'm going to rest a little first."

In the midst of the difficulty they were encountering with the method, experimental findings suggested that students in the discovery treatment were thinking more than those in the expository treatment. The discovery method seemed to be especially beneficial for learners who were less integrated into the formal educational system. An example of this trend is shown in Figure 2. On measures of a tendency to copy feedback in programmed lessons, learners who had experienced less school success resorted to mechanical techniques (copying answers) in the expository treatment more often than their more successful counterparts, particularly when left "on their own" on lessons completed at home. In the discovery treatment these differences all but disappeared; all students seemed to be thinking more.

Thus findings from the present research do not justify the hesitancy educators sometimes feel about introducing "foreign" methods, such as discovery teaching, into a culture. Discovery methods appear to be at least as effective as expository methods for Brazilian learners (they even surpass expository methods on some measures of thoughtful behaviors and retention of learning). Units of study which encourage thoughtful, constructed, and divergent responses to programmed items seem to be especially beneficial for learners who are less integrated into the formal educational system (less literate, less modern, and less motivated learners).

BEST COPY AVAILABLE



Other Implications for Cross-Cultural Teaching.--In addition to the method-specific implications for teaching discussed above, findings reported in present research have other, more generalized, applications to cross-cultural teaching.

Cross-cultural teaching must recognize individual differences among learners. For example, at almost every site some older persons were weak in reading and writing skills and had difficulty keeping pace with the group. Many of these students found writing tiring. One gray-haired woman exclaimed that she had never written so much in her life. Typically, some students forgot their glasses and would go home to get them or borrow a pair from a colleague. Experimental findings corroborated these observations of problems encountered by elderly students: older learners achieved more on oral measures while younger learners achieved more on written measures! Such differences among learners within and across cultures should be taken into consideration in a comprehensive plan for teaching.

Cross-cultural teaching must also include training in thinking skills. Most learners in this study found cognitive requirements (e.g., inductive reasoning) extremely difficult to cope with.

In one humorous (and probably extreme) example of the kind of difficulty students encountered with inductive logic, a woman insisted that papaya and oranges are not alike. A colleague explained that they were both fruits. The retort of the first woman was, "What good does it do to put things together that way? When I go to the market, I've got to ask for oranges." This student's comment reflects a healthy pragmatism that insists on the immediate usefulness of information! It also suggests that goals of adult basic education should include teaching how to think (strategies and processes) as well as teaching what to think (content).

In teaching across cultures, the educator has at least three options. His first option is to introduce new methods all at once and with no modifications; students must adapt to him. The second option available to the educator is a wholesale adaptation of instructional procedures to the expectations of the learners, carefully avoiding "foreign" innovations. As a third option, the educator may introduce planned change, initially accommodating teaching to the students' style of learning, but ultimately guiding the students toward optimal learning practices. The findings of the research reported here would encourage cross-cultural educators to opt for the third strategy, introducing planned change.

Introducing innovations in teaching (such as discovery and group methods) may be especially beneficial to less integrated, less successful learners within a society. Quite possibly, some of the school dropouts and misfits in Brazil are students who have developed one set of learning habits through their non-school environment, and have been unsuccessful in developing a new set of habits to fit the requirements of the formal educational structure. For these learners, adaptations of instruction in the direction of cultural attunement to the non-formal, non-school milieu may be essential if effective learning is to occur.

TABLE 1.--Summary of Variables. BEST COPY AVAILABLE

Treatment Variables

1. Individualized-Group Interaction
2. Expository-Discovery Program

Independent Variables

1. School Success
   - Intelligence Test Score
   - Years of Schooling
2. Modernity
   - Kind of School Experience
   - Urbanity of Previous Residence
   - Region of Previous Residence (distance from São Paulo)
   - Stability of Present Residence (in São Paulo)
   - Occupational Status
   - Attitudinal Modernity
   - Media Exposure
3. Motivation
   - Age
   - Sex
   - Community Participation

Dependent Variables

1. Acquisition of Content
   - Exercise 1
   - Exercise 2
2. Transfer of Training
   - Balance of Diet
   - Variety of Diet
   - Unprompted Recall of Course Information
3. Retention of Learning
   - Balance of Diet
   - Variety of Diet
   - Unprompted Recall of Course Information
4. Strategies Employed

   In Programmed Lessons:
   - Accuracy of Responses
   - Copying Feedback
   - Stability of Responses
   - Time Required

4. Strategies Employed (cont.)

   In Pretest-Posttest-Delayed Test:
   - "Pop" Choices (choosing popular foods)
   - Shifting Focus Among Food Groups
   - HI-HI-LO-LO Pattern (poor planning)
   - 1-2/3-4 Pattern (mechanical responses)
   - Wild Choices (random, thoughtless, responses)
   - Added Course Reasons to Earlier Reasons (rather than dropping earlier reasons in favor of newer ones)
5. Affective Responses
   - Pleasure Reasons for Food Choices
   - Choosing PI instead of a Story
   - Conversations Reported about Course
   - Completeness of Programmed Lessons
   - Working Alone or With Others
   - Attendance at Sessions

TABLE 2.--Measures of School Success.

BEST COPY AVAILABLE

Measure	Description	Coding and Scoring
IQ Score	Otis Mental Ability Test Beta Level, Short Form	Raw Scores 1 point for each
Years of Schooling	Responses to Questionnaire A, Item C-16: "Whey you quit going to school, what year were you in?"	Number (in years)

TABLE 3.--Measures of Modernity.

BEST COPY AVAILABLE

Measure	Description	Coding and Scoring
Kind of Schooling	Response to Questionnaire A, Item C-18: "(In your school) did the students remain seated to answer the teacher's questions, or did they have to stand up?"	3--remained seated 2--sometimes seated, sometimes stood 1--stood
Urbanity of Previous Residence	Questionnaire A, Item C-22: based on student's report of his residence when he was ten years old.	2--urban 1--rural (urban=community of 10,000 or more)
Region of Previous Residence	Questionnaire A, Item C-23: based on student's report of his residence when he was ten years old.	Scored 9 (furthest from São Paulo) to 1 (nearest São Paulo)
Stability of Residence in São Paulo	Response to Questionnaire A, Item C-26: "How long have you lived here (in São Paulo)?"	Scored 9 (nine or more years) to 0 (less than a year)
Occupational Status	Questionnaire A, Item C-21: Classification based on Hutchinson's[44] social grading of thirty common Brazilian occupations.	Scored 1 (high) to 6 (low)
Attitudinal Modernity	Questionnaire B: Smith-Inkeles (1966) Minimum Scale of Individual Modernity, Short Forms 5 and 6.[45]	13 items Each scored 3 (modern) to 1 (traditional) Possible score, 39
Media Exposure	Response to Questionnaire C, Item C-51: "During these three weeks of classes, did you see something on television which reminded you of our course?"	2--yes 0--no

TABLE 4.--Measures of Motivation.

BEST COPY AVAILABLE

Measure	Description	Coding and Scoring
Sex	Questionnaire A, Item C-13: interviewer's report	1--male 0--female
Age	Questionnaire A, Items C-14, 15: student's report	Raw score (actual age) recorded
Community Participation	Response to Questionnaire A, Item C-28: "How often do you go to church?"	Scored 5 (more than once a week) to 0 (never)

BEST COPY AVAILABLE

TABLE 5.--Measures of Acquisition of Content, Transfer of Training, and Retention of Learning

Measure	Description	Coding and Scoring
Exercise 1 (Criterion Measure)	Student, when given a list of eight foods, writes opposite each food the food group to which it belongs.	8 items 1 point for each correct response 8 points possible
Exercise 2 (Criterion Measure)	Student completes sentences by supplying number of daily servings required from each of four food groups.	4 items 2 points for each correct response 8 points possible
Balance of Diet (Repeated Measures: Pretest-Posttest-Delayed Posttest)	Student selects balanced diet from a list of foods.	2 points for each food group for which adequate number of foods selected 8 points possible
Variety of Diet (Repeated Measures: Posttest-Delayed Posttest)	In planning diet, student varies choices of foods from pretest to posttest and from posttest to delayed posttest.	Immediate posttest: 1 point for each food on posttest which did not appear on pretest Delayed posttest: 1 point for each food on delayed posttest that did not appear on posttest 13 points possible
Unprompted Recall (Repeated Measures: Pretest-Posttest-Delayed Posttest)	Student gives oral reasons for choosing one food he chose in planning diet.	1 point for each reason which reflects principles and information taught in course.

TABLE 6.--Measures of Strategies Employed in Learning.

BEST COPY AVAILABLE

Measure	Description	Coding and Scoring
Accuracy of Responses (Four Measures: Lessons 1, 2, 3 & 4)	Student's responses to programmed instruction items agree with feedback provided by programmer.	Percent of accurate responses for each lesson
Copying Feedback (Four Measures: Lessons 1, 2, 3 & 4)	Student shows evidence of copying feedback	1--evidence of copying feedback 0--no evidence of copying feedback
Stability of Responses (Four Measures: Lessons 1, 2, 3 & 4)	Student shows evidence of stable responses to program.	Percent of stable responses (those not changed during the lesson)
Time Required (Two Measures: Lessons 1 and 3)	Time required to complete programmed lessons in class.	Time spent (in minutes)
"Pop" Choices (Repeated Measures: Pretest-Posttest- Delayed Posttest	In planning diet, student chooses popular, well-liked foods.	Number of foods selected by student which are among the thirteen foods selected most frequently by all students (based on tally of pretest choices by subjects in study).
Shifting Focus (Repeated Measures: Pretest-Posttest- Delayed Posttest)	In planning diet, student shifts focus of attention from one food group to another, rather than systematically selecting foods from one group at a time.	1 point for each shift in focus
HI-HI-LO-LO Pattern (Repeated Measures: Pretest-Posttest- Delayed Posttest)	In planning diet, only 13 food choices are permitted. If student does not plan carefully, he tends to choose too many foods from first two groups, and too few foods from last two groups.	1--HI-HI-LO-LO Pattern observed 0--HI-HI-LO-LO Pattern not observed
1-2/3-4 Pattern (Repeated Measures: Pretest-Posttest- Delayed Posttest)	The pretest-posttest-delayed posttest instrument arranges blanks in such a way that the student who works mechanically (without recalling principles) fills blanks with foods printed in the column directly above them.	1--1-2/3-4 Pattern observed 2--1-2/3-4 Pattern not observed
Wild Choices (Repeated Measures: Pretest-Posttest- Delayed Posttest)	Student's choice of only one food from a group or more than four foods from a group is considered thoughtless ("wild") behavior.	1 point for each food group with wild (only one or more than four) choices
Added Course Reasons (Repeated Measures: Pretest-Posttest- Delayed Posttest)	Student adds course-based reasons to earlier (pretest) reasons for food choices, rather than dropping earlier reasons in favor of newer ones.	2--added course reasons to earlier reasons 1--dropped earlier reasons in favor of newer ones

TABLE 7.--Measures of Affective Responses to Instruction.

BEST COPY AVAILABLE

Measure	Description	Coding and Scoring
Pleasure Reasons for Food Choices (Repeated Measures: Pretest-Posttest-Delayed Posttest)	Student gives oral reasons for food choices which are affectively oriented (e.g., "I chose milk because I like it.")	1 point for each pleasure reason noted
Choosing PI instead of a Story	Student is offered a copy of Lesson 4 to teach a friend. He chooses between two teaching methods.	2--programmed instruction 1--story
Conversations about Course	Response to Questionnaire A, Item C-53: "During these three weeks of classes, did you talk with other persons about nutrition?"	2--a lot 1--a little 0--no
Completeness of Programmed Lessons (Four Measures: Lessons 1, 2, 3 and 4)	Student's tendency to complete programmed items, rather than to leave them blank.	Percent of complete items for each lesson
Working Alone or with Others (Five Measures: Lessons 1, 2, 3, 4, and Self-Report)	Student's preference for working alone or with others observed through responses to programmed lessons and self-report.	Lessons: 1--shows evidence of working with others 0--shows no evidence of working with others Self-Report: 2--worked with others 1--sometimes with others, sometimes alone 0--worked alone
Attendance at Sessions	Based on group attendance records	Percent of students in each intact group who completed course.

TABLE 8.--Summary of Findings Related to Hypothesis 1.

BEST COPY AVAILABLE

Hypothesis Tested	Findings Which Supported Hypothesis		Findings Which Supported Alternate Hypothesis
Learning occurs through PI in a Brazilian milieu	Posttests > Pretest:		None
	Balance of Diet	(5)	
	Unprompted Recall	(5)	
	Shifting Focus	(5)	
	Wild Choices	(5)	

KEY:
(1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure: similar trend on at least one other measure
(5) Statistically significant on more than one measure

TABLE 9.--Summary of Findings Related to Hypothesis 2a.

BEST COPY AVAILABLE

Hypothesis Tested	Findings Which Supported Hypothesis		Findings Which Supported Alternate Hypothesis	
The group interaction condition (more culturally attuned) is more effective than the individualized interaction condition (less culturally attuned)	G > I:		I > G:	
	Exercise 1	(1)	Exercise 2	(1)
	Accuracy of Responses	(2)	Copying Feedback	(2)
	Working with Others	(4)	Stability of Responses	(2)
			Time Required	(2)
			HI-HI-LO-LO Pattern	(2)

KEY: (1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure; similar trend on at least one other measure
(5) Statistically significant on more than one measure

I Individualized interaction
G Group interaction

TABLE 10.--Summary of Findings Related to Hypothesis 2b.

BEST COPY AVAILABLE

Hypothesis Tested	Findings Which Supported Hypothesis		Findings Which Supported Alternate Hypothesis	
The expository program condition (more culturally attuned) is more effective than the discovery program condition (less culturally attuned)	E > D:		D > E:	
	Exercises 1 and 2	(5)	Balance of Diet (gains of retention)	(1)
	Balance of Diet (overall achievement)	(2)	Copying Feedback	(5)
	Accuracy of Responses	(5)	HI-HI-LO-LO Pattern (delayed posttest)	(1)
	Time Required	(5)	Added Course Reasons	(1)
	HI-HI-LO-LO Pattern (immediate posttest)	(1)	Choosing PI Instead of a Story	(1)
	Completeness of Programmed Lessons	(5)		

KEY:
(1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure; similar trend on at least one other measure
(5) Statistically significant on more than one measure

E - Expository program condition
D - Discovery program condition

TABLE 11.--Summary of Findings Related to Hypothesis 3.

BEST COPY AVAILABLE

Hypothesis Tested	Findings Which Supported Hypothesis		Findings Which Supported Alternate Hypothesis	
The school success of learners affect the degree to which PI (under all treatment conditions) facilitates learning.	HI SCL > LO SCL:		LO SCL > HI SCL:	
	Exercise 1	(3)	Variety of Diet	(5)
	Exercise 2	(3)	Choosing PI Instead of Story	(3)
	Balance of Diet	(5)	Working Alone	(5)
	Accuracy of Responses	(5)		
	Copying Feedback	(5)		
	Stability of Responses	(5)		
	Time Required	(5)		
	"Pop" Choices	(5)		
	Shifting Focus	(3)		
	HI-HI-LO-LO Pattern	(3)		
	1-2/3-4 Pattern	(3)		
	Wild Choices	(5)		
	Added Course Reasons	(5)		
	Pleasure Reasons for Food Choices	(3)		
	Completeness of Programmed Lessons	(5)		

KEY: (1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure; similar trend on at least one other measure
(5) Statistically significant on more than one measure

HI SCL High School Success
LO SCL Low School Success

TABLE 12.--Summary of Findings Related to Hypothesis 4.

BEST COPY AVAILABLE

Hypothesis Tested	Findings Which Supported Hypothesis		Findings Which Supported Alternate Hypothesis	
The modernity of learners affects the degree to which PI (under all treatment conditions) facilitates learning	HI MOD > LO MOD:		LO MOD > HI MOD:	
	Balance of Diet	(3)	Unprompted Recall	(3)
	Variety of Diet	(3)	Time Required	(5)
	Copying Feedback	(3)	"Pop" Choices	(3)
	HI-HI-LO-LO Pattern	(5)	Added Course Reasons (on measures of modern school experience and attitudinal modernity)	(5)
	1-2/3-4 Pattern	(5)	Completeness of Lessons	(5)
	Added Course Reasons (on measures of urbanity, proximity of previous residence to São Paulo, stability of present residence in São Paulo, higher occupational status)	(5)	Working with Others (on measures of modern school experience and attitudinal modernity)	(5)
	Pleasure Reasons for Food Choices	(3)		
	Conversations about Course	(5)		
	Working with Others (on measures of proximity of previous residence to São Paulo, stability of residence in São Paulo, higher occupational status)	(5)		

KEY:
(1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure; similar trend on at least one other measure
(5) Statistically significant on more than one measure

HI MOD High Modernity
LO MOD Low Modernity

TABLE 13.--Summary of Findings Related to Hypothesis 5.

BEST COPY AVAILABLE

Hypothesis Tested	Findings Which Supported Hypothesis			Findings Which Supported Alternate Hypothesis		
Motivation to learn affects the degree to which PI (under all treatment conditions) facilitates learning	HI MOT > LO MOT:			LO MOT > HI MOT:		
	Exercise 1	com	(3)	Accuracy of Responses	age	(3)
	Exercise 2	com	(3)	Stability of Responses	age com	 (5)
	Balance of Diet	sex	(3)	Time Required	age	(3)
	Variety of Diet	age	(3)	Shifting Focus	age	(3)
	Unprompted Recall	age	(3)	HI-HI-LO-LO Pattern	age	(3)
	Copying Feedback	sex com	 (5)			
	1-2/3-4 Pattern	sex	(3)			
	Wild Choices	sex age com	 (5)			
	Added Course Reasons	sex age com	 (5)			
	Conversations about Course	sex age	 (5)			
	Working with Others	sex age com	 (5)			

KEY:
(1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure; similar trend on at least one other measure
(5) Statistically significant on more than one measure

HI MOT	High Motivation
LO MOT	Low Motivation
COM	Community Participation

TABLE 14.--Summary of Findings Related to Hypothesis 6a.

BEST COPY AVAILABLE

Hypothesis Tested	Findings Which Supported Hypothesis		Findings Which Supported Alternate Hypothesis	
The group interaction condition (more culturally attuned) is relatively more productive for learners with less school than for those with more school success.	G > I:		I > G:	
	Balance of Diet	(3)	Copying Feedback	(3)
	Accuracy of Responses	(1)	Stability of Responses	(3)
	Wild Choices	(3)	Shifting Focus	(1)
	Completeness of Programmed Lessons (in class)	(1)	Choosing PI instead of Story	(3)
			Completeness of Programmed Lessons (at home)	(3)
			Working with Others	(1)

KEY:
(1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure; similar trend on at least one other measure
(5) Statistically significant on more than one measure

I Individualized interaction
G Group interaction

TABLE 15.--Summary of Findings Related to Hypothesis 6b.

BEST COPY AVAILABLE

Hypothesis Tested	Findings Which Supported Hypothesis		Findings Which Supported Alternate Hypothesis	
The expository program condition (more culturally attuned) is relatively more productive for learners with less school success than for those with more school success.	E > D:		D > E:	
	Accuracy of Responses	(5)	Unprompted Recall	(1)
	"Pop" Choices	(1)	Copying Feedback	(5)
	Completeness of Programmed Lessons	(2)	Stability of Responses	(2)
	Working with Others	(2)	Wild Choices	(2)
			Added Course Reasons	(3)

KEY:
(1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure; similar trend on at least one other measure
(5) Statistically significant on more than one measure

E Expository program condition
D Discovery program condition

TABLE 16.--Summary of Findings Related to Hypothesis 7a.

BEST COPY AVAILABLE

Hypothesis Tested	Findings Which Supported Hypothesis		Findings Which Supported Alternate Hypothesis
The group interaction condition (more culturally attuned) is relatively more productive for traditional learners than for modern learners	G > I:		None
	Exercise 1	(1)	
	Balance of Diet	(4)	
	Accuracy of Responses	(1)	
	Copying Feedback	(2)	
	Stability of Responses	(1)	
	Time Required	(1)	
	"Pop" Choices	(2)	
	HI-HI-LO-LO Pattern	(1)	
	1-2/3-4 Pattern	(2)	
	Wild Choices	(5)	
	Pleasure Reasons	(4)	
	Conversations about Course	(1)	
	Completeness of Programmed Lessons	(1)	
	Working with Others	(1)	

KEY:
(1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure; similar trend on at least one other measure
(5) Statistically significant on more than one measure

I Individualized interaction
G Group interaction

TABLE 17.--Summary of Findings Related to Hypothesis 7b.

BEST COPY AVAILABLE

Hypothesis Tested	Findings Which Supported Hypothesis	Findings Which Supported Alternate Hypothesis	
The expository program condition (more culturally attuned) is relatively more productive for traditional learners than for modern learners	None	D > E:	
		Exercise 1	(3)
		Exercise 2	(1)
		Accuracy of Responses	(4)
		Copying Feedback	(1)
		Wild Choices	(1)
		Added Course Reasons	(3)
		Conversations about Course	(3)
		Completeness of Programmed Lessons	(3)

KEY:
(1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure; similar trend on at least one other measure
(5) Statistically significant on more than one measure

E Expository program condition
D Discovery program condition

TABLE 18.--Summary of Findings Related to Hypothesis 8a. **BEST COPY AVAILABLE**

Hypothesis Tested	Findings Which Supported Hypothesis		Findings Which Supported Alternate Hypothesis	
The group interaction condition (more culturally attuned) is relatively more productive for less motivated learners than for more motivated learners	G > I:		I > G:	
	Added Course Reasons	(1)	Accuracy of Responses	(1)
	Working with Others (observed)	(1)	Copying Feedback	(3)
			Stability of Responses	(4)
			Time Required	(2)
			"Pop" Choices	(2)
			1-2/3-4 Pattern	(3)
			Pleasure Reasons for Food Choices	(4)
			Completeness of Programmed Lessons	(2)
			Working with Others (reported)	(1)

KEY: (1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure; similar trend on at least one other measure
(5) Statistically significant on more than one measure

I Individualized interaction
G Group interaction

TABLE 19.--Summary of Findings Related to Hypothesis 8b.

BEST COPY AVAILABLE

Hypothesis Tested	Findings Which Supported Hypothesis		Findings Which Supported Alternate Hypothesis	
The expository program condition (more culturally attuned) is relatively more productive for less motivated learners than for more motivated learners	E > D:		D > E:	
	Accuracy of Responses	(4)	Variety of Diet	(5)
	Stability of Responses (in class)	(1)	Balance of Diet	(1)
	Choosing PI Instead of Story	(1)	Copying Feedback	(2)
	Completeness of Programmed Lessons	(3)	Stability of Responses (at home)	(3)
	Working with Others	(2)	Shifting Focus	(1)
			Wild Choices	(2)
			Added Course Reasons	(1)

KEY:
(1) Trend on one measure
(2) Trend on more than one measure
(3) Statistically significant on one measure
(4) Statistically significant on one measure; similar trend on at least one other measure
(5) Statistically significant on more than one measure

E Expository program condition
D Discovery program condition

BEST COPY AVAILABLE

TABLE 20.--Analysis of Variance of Over-All Means on Selected Pretest-Posttest-Delayed Posttest Measures.

Measure	Pretest	Posttest	Delayed Posttest	F-ratio
Balance of Diet	1.87	3.62	3.28	13.96*
Unprompted Recall	.037	.531	.475	25.82**
Shifting Focus	6.57	5.16	5.13	21.35**
Wild Choices	1.46	.86	.89	15.09**

*Significant at the .005 level.

**Significant at the .001 level.

FOOTNOTES: CHAPTER III

BEST COPY AVAILABLE

[1] Hubert Dyasi, ed. *Reports.*

[2] Our apologies to Malcolm Knowles, the eminent professor of adult education, who contends that the use of "pedagogy" is properly restricted to concerns about the teaching of children. His argument, from the etymology in Greek, insists on "andragogy."

[3] P. Kenneth Komoski, "April Forum: P.I. Around the World," *Programmed Instruction,* IV (April, 1965), p. 1.

[4] Seth Spaulding (comp.), *Programmed Instruction: An International Directory* (Paris: UNESCO, 1967), p. iv.

[5] Interest in programmed instruction appears to be especially keen in development education. Educators see in PI potential help in solving educational problems ranging from improving the quantity and quality of instruction in the face of teacher shortages to providing busy farmers non-formal instruction in basic skills. Pilot studies of the feasibility of programmed instruction are being carried on in India by AID. UNESCO has been involved in a variety of PI projects in Africa, the Middle East, Asia, and Latin America. The Commission on International Development has recommended greater resources for research and experimentation with new techniques, including television and programmed learning. In Brazil, the Ministry of Education and Culture is implementing plans to use PI as a primary method in adult basic education.

[6] Lawrence M. Stolurow, "Programmed Instruction," *Encyclopedia of Educational Research,* ed. by Robert L. Ebel (4th ed.; Toronto, Ontario: The Macmillan Company, 1969), p. 1020.

[7] A fuller description of a system development approach to educational planning is provided in Ted Ward, Lois McKinney, and John Dettoni, "Designing Effective Learning in Nonformal Modes," *New Strategies for Educational Development: The Cross-Cultural Search for Nonformal Alternatives,* ed. by Cole S. Brembeck and Timothy J. Thompson (Lexington, Mass.: D. C. Heath and Company, 1973), pp. 111-124.

[8] Henry Burger, *Ethno-Pedagogy: A Manual in Cultural Sensitivity with Techniques for Improving Cross-Cultural Teaching by Fitting Ethnic Patterns* (Revised ed.; Albuquerque: Southwestern Cooperative Educational Laboratory, 1971).

[9] Lois McKinney, "Cultural Attunement of Programmed Instruction: Individualized-Group and Expository-Discovery Dimensions" (unpublished Ph.D. Dissertation, Michigan State University, 1973).

[10] Burger, *op. cit.*, pp. 98, 141.

[11] Gerard C. Kress, Jr., *A Study of Social Facilitation During Programmed Instruction* (Pittsburgh: American Institutes for Research in Behavioral Science, 1967), p. 4.

[12] Roda P. Amaria, L. A. Biran, and G. O. M. Leith, "Individual Versus Co-operative Learning," *Educational Research,* XI (1969), p. 103.

[13] Meyer Fortes, "Social and Psychological Aspects of Education in Taleland," *Africa,* XI, 4 Supplement (1938), 30.

[14] E. T. Hall, *The Silent Language* (New York: Doubleday and Company, Inc., 1959), p. 53.

[15] Jerome S. Bruner, "The Process of Education Revisited," *Phi Delta Kappan,* LIII (September, 1971), 19.

[16] Wilbur Schramm, *The Research on Programmed Instruction: An Annotated Bibliography* (Washington, D.C.: Office of Education, U.S. Department of Health, Education and Welfare, 1964), pp. 3, 4.

[17] Florence R. Kluckhohn and Fred L. Strodtbeck, *Variations in Value Orientations* (New York: Harper and Row, 1961).

[18] Hall, *loc. cit.*

[19] E.g., Arnold Bond Woodruff, Charles Faltz, and Diane Wagner, "Effects of Learner Characteristics on Programmed Learning Performance," *Psychology in the Schools,* III (January, 1966), 72-77.

[20] Everett M. Rogers, *Modernization Among Peasants: The Impact of Communication* (New York: Holt, Rinehart and Winston, Inc., 1969), pp. 297-298.

[21] Cursinho is a diminuative Portuguese form meaning "little course" and connoting both warm acceptance and short duration.

[22] A nutrition unit developed in Brazil as a cooperative effort involving the Cruzada ABC, SUDENE, and AID was selected. The Cruzada is a literacy/adult education program with headquarters in Recife. SUDENE is a federal government agency which coordinates a variety of regional development programs in Northeast Brazil.

BEST COPY AVAILABLE

[23] Lee S. Shulman, "Psychology and Mathematics Education," *Mathematics Education*, Sixty-ninth Yearbook of the National Society for the Study of Education, Part I (Chicago: University of Chicago Press, 1970), pp. 23-71.

[24] Unfamiliar words are defined as those not included among the 2,500 most frequently used words in the Portuguese language. The source for word frequency information is Charles B. Brown, Wesley M. Carr, and Milton L. Shane, *A Graded Word Book of Brazilian Portuguese* (New York: F. S. Crofts & Company, 1945).

[25] George Spache, "A New Readability Formula for Primary-Grade Reading Materials," *Elementary School Journal*, LIII (March, 1953) 410-413.

[26] Seth Spaulding, "A Spanish Readability Formula," *Modern Language Journal*, XL (December, 1956), 433-441.

[27] *Manual do Escritor de Literatura para Novos Leitores Adultos* (Recife: Cruzada ABC, 1965), p. 150.

[28] Robert M. Gagne, *The Conditions of Learning* (New York: Holt, Rinehart, and Winston, 1965), p. 150.

[29] This programmed unit is available (in Portuguese) through the Institute for International Studies in Education, Michigan State University.

[30] Portuguese versions of the instruments described here (except the Otis IQ measure) are available through the Institute for International Studies in Education, Michigan State University. They are also reproduced in McKinney, *Cultural Attunement of PI*, pp. 242-267.

[31] William A. Herzog, Jr., *Students of Cruzada ABC in Aracaju, Sergipe: Description and Comparison by Phases* (Recife: Research Report submitted to USAID/NEHR, June, 1970).

[32] Joseph Alan Kahl, *The Measurement of Modernism: A Study of Values in Brazil and Mexico* (Austin: Institute of Latin American Studies, University of Texas, 1968).

[33] Dick Horton Smith and Alex Inkeles, "The OM Scale: A Comparative Socio-Psychological Measure of Individual Modernity," *Sociometry*, XXIX (1966), 353-377.

[34] Three adaptations of the Smith-Inkeles instrument were made. One item (FS-3), asking for the subject's opinion on family planning, was substituted by a less controversial item (FS-1) from the long form of the Smith-Inkeles scale: "What is the ideal number of children for a man like yourself?" Another substitution was made: Item RE-12 ("Do you think a man can be good without having any religion at all?") was substituted by long form item RE-11 ("What is most important in caring for a sick person, prayer or medical care?"). The latter item was considered better attuned to a religiously-oriented society than the former. A third adjustment of the instrument involved dropping one of the behavior information items (AC-1,2) because similar information had already been provided through Questionnaire A (Item 28).

[35] Smith and Inkeles, *loc. cit.*

[36] Detailed validity and reliability information regarding the instrument is available in Smith and Inkeles, *loc. cit.*

[37] Paraphrased from an unpublished report (in Portuguese) on the intelligence testing phase of this investigation (J. N. Paternostro, *Pesquisa do Nivel Mental em um Grupo de 169 Adultos da Cidade de São Paulo atraves do Teste Otis)*. Available through the Institute for International Studies in Education, Michigan State University.

[38] Untitled review by Alfred Yates in Oscar Krisen Buros, ed., *The Fifth Mental Measurements Yearbook* (Highland Park, N.J.: The Gryphon Press, 1959), pp. 499-500.

[39] Portuguese, *da escolha*.

[40] Translated from the Portuguese instrument.

[41] Translated from the Portuguese instrument.

[42] Instructions for the individualized treatment were: (1) read the page, (2) do what the book says, (3) turn the page, (4) check your work, and (5) go on with the lesson. Instructions for the group treatment were: (1) one student reads the page, (2) all do what the book says, (3) all turn the page together, (4) all check and discuss their work, (5) another student reads the next page, etc. These instructions were explained by the teacher and displayed on classroom posters.

[43] Lesson 4 provided instruction which was unrelated to the posttest task, so that the sequence of instruction would allow a retention test during the last class session.

BEST COPY AVAILABLE

[44] Lee J. Cronbach, "The Logic of Experiments on Discovery," *Learning by Discovery: A Critical Appraisal*, ed. by Lee S. Shulman and Evan R. Keislar (Chicago: Rand McNally and Company, 1966), pp. 76-92.

[45] Shulman, *Psychology and Mathematics Education*, pp. 23-71.

[46] Results of these analyses are reported in McKinney, *Cultural Attunement of PI*, pp. 108-177. Original case data are available through the Institute for International Studies in Education, Michigan State University.

[47] Schramm, *The Research on Programmed Instruction*, pp. 3, 4.

[48] The problem encountered here illustrates a recurring dilemma in curriculum research. A decision to control the teaching environment increases the precision of the treatment (and, consequently, the possibility of statistically significant findings) but decreases the applicability of findings to real settings in which teaching variables can and do interact in a variety of ways. On the other hand, a decision to create a less controlled teaching environment increases the applicability of research results to natural settings, but--through the inherent risk of confounding variables and weakening contrasts between treatments--decreases the possibility of statistically significant findings.

[49] M. C. Wittrock, "The Learning by Discovery Hypothesis," *Learning by Discovery: A Critical Appraisal*, ed. by Lee S. Shulman and Evan R. Keislar (Chicago: Rand McNally and Company, 1966), pp. 33-75.

[50] R. Thomas Tanner, "Discovery as an Object of Research," *School Science and Mathematics*, LXIX (1969), 647-655.

[51] G. D. Hermann, "Learning by Discovery: A Critical Review of Studies," *Journal of Experimental Education*, XXXVIII (Fall, 1969), 58-72.

[52] In the present study, the students who reported the most modern school experiences happened to be attending an adult literacy school where relatively modern teaching methods were being employed. Thus this measure could more accurately be interpreted as a measure of the relative effectiveness of adult remedial or childhood education.

[53] David P. Ausubel, *Educational Psychology: A Cognitive View* (New York: Holt, Rinehart and Winston, 1968.

[54] It is conceivable, of course, that forms of cultural attunement other than those assumed to be important in this research would produce different results and different conclusions.

[55] cf. Cronbach, *loc. cit.*

CHAPTER IV

INCREASING LEARNING EFFECTIVENESS THROUGH EVALUATION

Ted Ward
John M. Dettoni

Ignorance forces us to try anything![*]

The recent period of rising nationalism in Latin America and the post-colonial period of national rebirth in Africa and Asia has coincided with a time of worldwide inventiveness in education. There is no shortage of ideas and models for educational innovation and no shortage of willingness to try new solutions for old problems. Without doubt, in much of the developing world the colonial ways persist in many institutional forms, and formalisms in education are among the more resistant to change. Whimsical alternatives or additions to time-honored ways and means of education are relatively short-lived unless they clearly show superior results--as viewed by the powerful decision-makers. Therein lies a matter of great professional concern: through what processes will the innovations be identified as being promising and worthy of continuation?

Within the non-formal sector, there have been particularly impressive innovations. Partly because of their relative freedom from traditions and partly because of their pragmatic concern for getting a job done, many programs of non-formal education have been quick to adopt technological innovations. Television, programmed instruction, motion pictures, audio and video recordings are as commonly found in non-formal education as in formal education. In more highly developed countries, at least, these devices of instructional communication are more typical of non-formal education than of formal schooling. Thus the basis for continuation, suspension, or improvement of the uses of technology is especially problematic.

---

[*] Oettinger, *Run Computer Run*, p. 224.

Conceptual Background

Specialists in instructional technology are quick to point out that the essence of effective use of modern instructional devices and procedures lies less in the machinery than in the design of the instructional communication. The technologist's flow chart or schematic diagram usually begins with "specification of objectives" and ends with "evaluation." These concerns (and the underlying concept of achieving learning objectives effectively) are as dear to the heart of the competent instructional technologist as are gadgets and machines. In fact, the mechanical artifacts are sometimes expendable!

Evaluation is Indispensible

Evaluation is interlocked with learning effectiveness. Since effective consequences of instructional deliveries are of the learning experiences themselves is of fundamental concern to non-formal education, evaluation is indispensable. Although an established form of education--especially a formal school--can survive for many years on the momentum of its entity, non-formal education operations--especially those that are created to accomplish specific objections--are not apt to survive unless they can demonstrate that they are performing their intended function.

For well-designed instruction that can be held accountable to deliver effective learning planning (specification of learning objectives, identifying learner characteristics, and designing a coordinated delivery system) is most certainly basic. But the realization of the intended objectives and the effectiveness of the delivery system cannot be taken for granted. Evaluation is indispensible.

In scientific terms, evaluation is an important procedural basis for discovery. What has been accomplished, which intended outcomes have been achieved, what weaknesses or failures have occurred and what importance should be ascribed to each of these. Educational evaluation from a technological viewpoint, has much in common with the concerns of any other social process evaluation. In reference to the evaluation of its investments in social progress, the Inter-American Foundation writes:

> *This answer alone, however, is not sufficient. One also needs to know how and why the project produced the results measured, be they negative or positive. Thus, there is a need to critically observe the evolution of the project over time, using as many techniques and "disciplines" as are needed to understand the type of project in question. In this way one learns of the processes of change as well as the results and hopefully can see the relation between the two* (Inter-American Foundation, 1972, p. 3).

How different from earlier times when educational evaluation was focused on the success or non-success of students! The technological uses of evaluation are committed to the view that "failure" (non-learning or ineffective learning) are less a matter of inadequacy in the student than a matter of flaws in the instructional system. (Even the problem created by the student who lacks prerequisite knowledge is seen as a failure of the instructional system's screening or remediation procedures.)

In this era of technology, evaluation is socially respectable--even expected. Evaluation--especially testing of students--has long been a standard part of formal education. As more and more organizations, producers, publishers, and distributors become involved in the supplying of educational materials and resources, they become caught up in the demands for evaluation. Within American education today, for example, "accountability" has become a watchword. Is it worth what it costs? Does it do what it is supposed to? Is *X* better than *Y*? These are the new questions being asked within the educational establishment, replacing or augmenting the historical evaluative questions focused on "how well is Freddy learning?"

Research of any sort is generally limited by the questions it is able to ask with precision. For example, the findings of an evaluation can be no more precise than the questions posed. Three problems enter at this point: costs, time, and specificity. Sometimes too many questions are asked--administrators of educational programs tend to assume that where an evaluation is underway it is as easy to find out ten kinds of information as it is five. But evaluators know that answering questions is costly, and the more questions, the higher the cost. Another problem arises when important questions require long periods of time to get responsible answers. For example, longitudinal studies of months or years duration are necessary to evaluate certain long term impacts and case-study effects. A problem even more difficult than time and cost is the lack of clearly specified objectives. When only generalized statements of objectives and platitudinous goal statements are available, hardly any questions can be asked in a precise manner. Thus the first task for the design of an evaluation is to identify worthy questions which could be answered specifically within the time and cost constraints of the requested study.

Two Kinds of Evaluation

Summative Evaluation

Technologists see two different sorts of evaluation--a distinction more of intended uses of the evaluations than of differences in procedure. First, and most familiar is summative evaluation--intended to provide a basis of judgment of the worth of the effects of the instructional program, material or experience. Summative evaluation is generally based upon measurements of the resultant learning or perhaps the residual learning available to be applied in real situations; such measurements are assessed against either pre-test data taken before the instructional experience, or against the specifications of

BEST COPY AVAILABLE

intended achievements, or both. Summative evaluation, at its best, is a judgment of social worth of a program, material, or experience.

The basis for assessment in summative evaluation is usually the intended outcomes. What actually results from an educational program is compared with what was intended and is judged to have reached or not reached satisfactory levels of outcome. (As we will see later in the chapter, the assessment looks at differences between intended outcomes and actual outcomes, or between needs and satisfactions of those needs; but the evaluation itself is based upon a value position that sets forth what is satisfactory or unsatisfactory.)

Figure 1 shows the basis of assessment in the typical summative evaluation. Simply stated, the question is, "did the operation accomplish what was intended or needed?" The secondary but also important question (Q2) asks whether or not it was the educational program itself or some other social event that led to the actual outcomes.

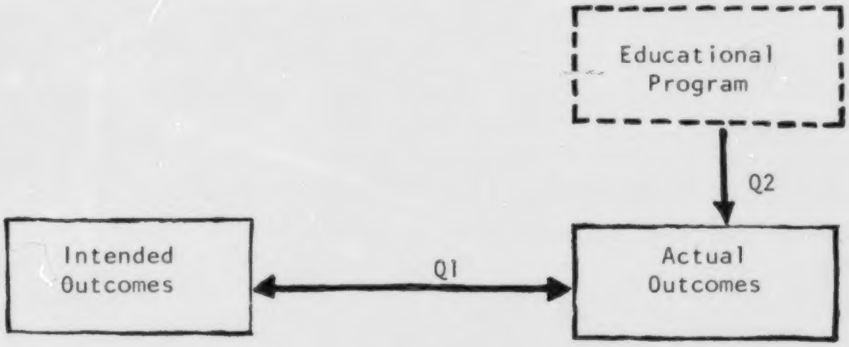


Figure 1.--The Three Bodies of Data Necessary for the Typical Summative Evaluation.

Formative Evaluation

Formative evaluation, the second of the two major sorts of evaluation, has come into its own largely bacause of a recent coinage of terminology. In terms of its purpose--getting information that can lead to the improvement of an educational program, material or experience--it is hardly new. One of the time-honored uses of evaluation is to make changes. In the way formative evaluation occurs in schooling, the change may be to return a pupil to an earlier experience or status, to terminate the services of a teacher, or to seek out a replacement textbook. Today formative evaluation is acknowledged as the beneficent provider of intelligence with reference to improvement of education (despite the fact that evaluation is incapable of telling what ought to be done in place of something that isn't working well).

"If a thing is worth doing, it's worth doing badly." In these words G. K. Chesterton suggested that necessity often works against perfection. The necessity of meeting diverse and compelling human needs in a complex and ever-shifting social environment demands invention, revision and change. In such circumstances it is often necessary to do things badly. Faith in one's goals is more appropriate than faith in one's methods.

On first hearing, Chesterton's assertion has a tone of defeat and resignation. For the perfectionist it strikes a discordant note, seemingly inconsistent with high and noble contentions. The practical logic of life, no matter how commonly practiced and easily accepted as behavior, is often startling when put into words. Thus when the importance of doing something is contrasted with the quality or effectiveness of the doing, the practical logic of life says "do something--anything!"

Traditionally, the role of evaluation in education and other institutions of social change has been to detect, assess, and weigh the importance of the consequences or effects of what has been done. How well, how much, for whom, at what costs are the typical issues examined by evaluative efforts. Evaluation has been more concerned with Chesterton's "doing things badly" than with making them better.

In recent years, the technology of evaluation has undergone important changes. The use of electronic computers has stimulated a variety of innovations, particularly related to collecting, storing and analyzing great quantities of data. But one of the most important changes is more conceptual than technical: educational evaluation is recognized as valuable for two different sets of purposes: formative and summative. Most of the uses of evaluation in the past were summative, in that they were concerned with summations or conclusions about consequences and end products. Today evaluation is also designed to serve as an aid to the planning and development process; formative evaluation is designed to provide feedback data that will shape and reshape the educational operation until its procedures are appropriate for reaching its goals.

The basic assumptions underlying formative evaluation are the following:

1. An educational program is an imperfect venture, achieving somewhat less than competently what its operators intend;
2. The most important purpose of evaluation is improvement of the operation; the important judgments to be made are those that relate to factors which can be altered.

Thus the purpose of formative evaluation is to provide data and judgments which will be useful in making an imperfect operation better. The logic of formative evaluation is altogether consistent with the real world of needed social action and contextual uncertainties: it relates to systems in process, not after the fact; and it seeks to provide ways and means of improvement rather than to pass judgments that will discourage and defeat well-motivated efforts.

To add to Chesterton's assertion, formative evaluation is committed to the proposition that anything worth doing is worth doing badly at first.

Figure 2 summarizes the major distinction between the two purposes of evaluation. The questions that are raised in formative evaluation are directed toward the purpose of making informed change in the educational efforts. The questions in summative evaluation are those more classically assigned to the task of evaluation as the provider of ultimate judgment about the worth of effects.

The probability that a non-formal educational operation will be seen as imperfect and in need of change is at least as high as in formal education. Especially in reference to deliberately planned

BEST COPY AVAILABLE

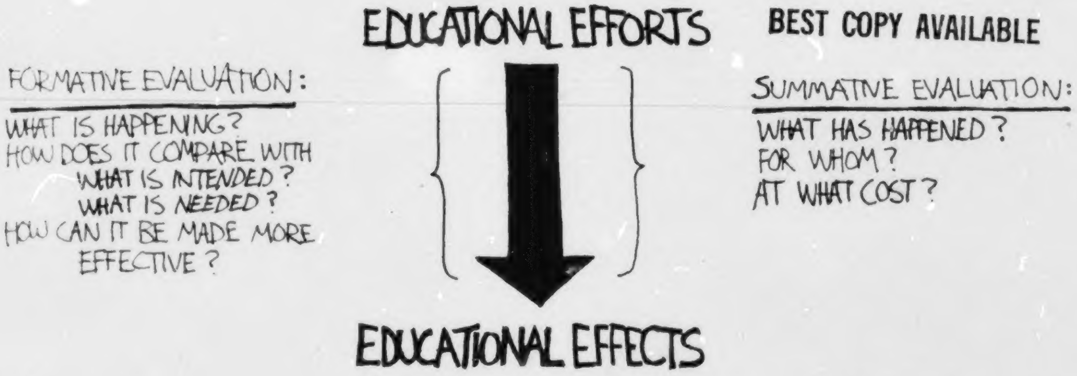

EDUCATIONAL EFFORTS
FORMATIVE EVALUATION:
WHAT IS HAPPENING?
HOW DOES IT COMPARE WITH WHAT IS INTENDED? WHAT IS NEEDED?
HOW CAN IT BE MADE MORE EFFECTIVE?
SUMMATIVE EVALUATION:
WHAT HAS HAPPENED?
FOR WHOM?
AT WHAT COST?
EDUCATIONAL EFFECTS

Figure 2.--The Major Distinction Between the Questions for Formative and Summative Evaluation

non-formal education, the intended outcomes are usually stated or implied in specific reference to skills and competencies that are specific, describable, and relatively easy to assess. Further, the societal needs to which non-formal education programs are commonly related are usually demanding enough that malfunction of the educational program will be promptly seen and felt--felt as frustrations and compounded problems in the society (unlike formal education wherein malfunctions are sometimes undetected for generations). Thus non-formal education, at least as much as formal education can use evaluation as a tool through which to make orderly change toward increased effectiveness.

Since the distinction between formative and summative is concerned with the purposes of evaluation, these terms do not necessarily indicate separate kinds of data gathering or different kinds of concerns about reliability and validity. Formative evaluation is intended to provide information on which judgments can be made about the effectiveness and worth of the educational experience and the materials and procedures that produced it.

Evaluation Relates to Theory

In order to enhance the usefulness of formative evaluation and in order to provide a comprehensive value position for summative evaluation, a statement of the theoretical position about the intended learning and the appropriate learning experiences is indispensable. The theoretical position statement will serve as a basis for all evaluative operations and as a point of reference toward which to direct all evaluative conclusions.

The complex forms of non-formal education--for example, community development education--require much invention of methods and procedures. It is commonly reported even within unified programs that each situation is significantly different and that each application of a general methodology requires variations and adjustments in order to properly relate to the "local situation." The invention, or "local adaptation" as it is usually called, may take place within a general theory of educational methodology, but will succeed or fail in reference to the appropriateness of the adaptations. The commonly observed irregularities and unevenness of learning effectiveness from one location to another can be reduced in two different ways: (1) more careful implementation of the general theory upon which the program is based, and (2) more careful adjustment and adaptation to the local situation. In reference to the first, the general theory will itself need to be under constant reexamination and revision on the basis of feedback from the field operations. The second, adaptation to the local situation, also demands that feedback be made available and used by the staff and leaders of the field operation to decrease the discrepancy between intended and realized outcomes (see Figure 3).

The Relation of Evaluation and Change

Evaluation is a point of contact between science and management. Evaluation is neither purely science nor purely management. A well designed evaluation program takes account of the rudimentary results of scientific inquiry in order to reduce the likelihood of biased and

BEST COPY AVAILABLE

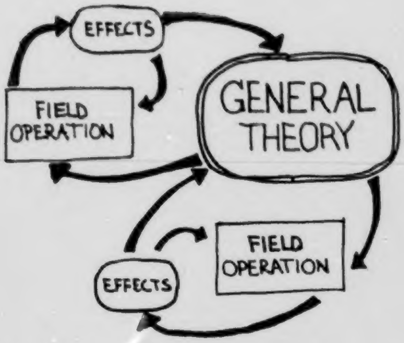


Figure 3.--Symmetrical Model of Feedback to Field Operations and to General Theory.

and misleading findings. In management terms, an effective evaluation program enlightens decision-making.

Figure 3 suggests the sort of information flow that exists within an organization in which invention and discovery are seen as tools to produce increased effectiveness. The various field operations are based on a general theory (a more or less specific statement about the nature of the task to be done, the methods to be used and the results to be expected). The field operations and the effects they produce are constantly being examined for evidences of substantiation or challenge of the general theory. The effects in the field are also being examined with reference to the indication of needed changes of the field operation itself. In other words, evaluation is a deliberate part of the strategy or approach in the field. The two targets of feedback, the general theory and the field operation, are both important foci for the formative evaluation. The general theory is the common repository of the accumulated insights and wisdom derived from all the field operations; it is a point of focus bridging between what is being learned in the overall program and what is known from the related scholarly research fields. The general theory is the point of similarity among all field operations--the "guiding light" which illuminates similarly the various specific local operations of the program. The other target of feedback, each local field operation, is a microcosm of the whole program and of the general theory. In the

BEST COPY AVAILABLE

local field operations of an informed and competent non-formal education organization, the general theory itself allows for or encourages an interaction between effects and procedures. Through this interaction procedures are adapted in certain ways in order to increase the conditions and treatments that relate to learning effectiveness.

The figure suggests a model of feedback that is symmetrical, in that the local field operations engage in a use of feedback that is a reflection of the use of feedback at the level of corporate involvement with general theory. There is a symmetry and consistency between the roles of concepts of needs, procedures of intervention, feedback on effects and revision of the system in which the operational levels reflect the broader total organizational levels.

Four Operations in Evaluating

Most competent evaluations are based on a series of four operations best described as a series of steps or stages. Figure 4 shows that the base or first stage is description; on this is built measurement; on measurements are built assessments; and then, by bringing value positions to bear on the assessments, one can make evaluations.

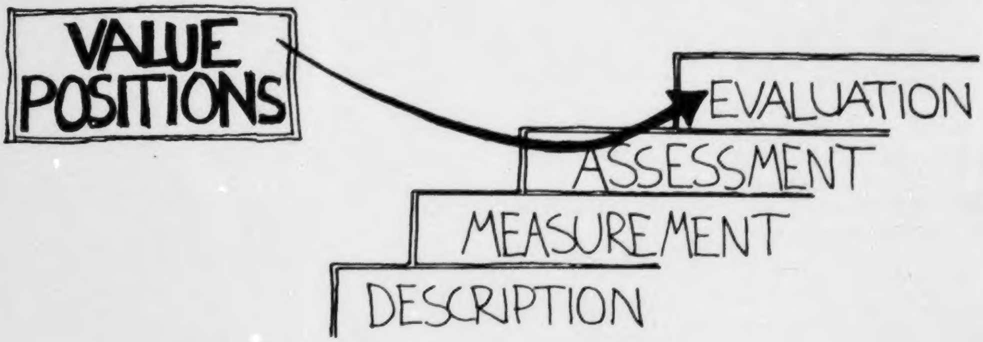


Figure 4.--The Four Operations of Evaluation.

The *description* of phenomena to be evaluated is a necessary first step. Usually these descriptions are verbal, though graphic and pictorial descriptions are often more meaningful. The measurement step is necessary if clear-cut assessment is to follow. Most scientists in the physical and social science domains will insist that descriptions that have not been quantified are an inadequate basis for comparative analysis. That differences may exist can sometimes be determined "by inspection," but without measurements (expressions of the descriptions in numerical terms) the significance of the contrasts can be stated only subjectively.

Comparisons of two or more measurements constitutes *assessment*. Two scores representing two different learners can be used to assess that one has achieved more than the other. Two measurements taken on the same learner at two different times can be used to assess that a learning gain has taken place. Even the statistical significance of these differences (gains, losses, relative competencies, etc.) can be determined as assessment activities. But to say that the gain is *important*, that the learner has achieved *well*, or that the competency is *adequate* requires a step beyond assessment; such judgments are representations of the outcomes of *evaluation*. Evaluation is the process of putting a value judgment on the conclusions of an assessment. Or, putting it another way, evaluation is judgment of the worth or importance of an empirical finding.

That "goodness" is very much a relative matter in educational evaluation is illustrated by the contrast between conclusions one draws from two different value positions: assuming that educators are concerned about both *growth* and *competency*, each can be taken as a value position. Assume that the following scores for a set of five learners represent a pre-test before a learning experience. (The students are named Angela, Bob, Carlo, Dominique, and Eric.)

A	14
B	12
C	10
D	7
E	4

After the learning experience, the following scores might result from a second measurement on the same test used for the pre-test:

A	18
B	14
C	14
D	14
E	9

An assessment of these measurements allows expression of the scores as differences, "growth," or learning scores:

A	+4
B	+2
C	+4
D	+7
E	+5

Which learner did better? Who is the best or who is better cannot be answered until we take a value position. For example, if one assumes that competency is the value ("competency is more important than growth") then clearly Angela is more competent in this skill or knowledge--before and after the learning experience. Eric remains the least competent. Bob, Carlo, and Dominique seem now to be equally competent. This evaluation is based on an assessment of the differences of the various post-test scores in light of the competency value position. Thus when we note that Angela "did better" we are evaluating on the basis of competency.

If we accept another value position, that growth is more important than competency, then Dominique "did better." In terms of growth, Dominique's 7-point gain is the largest, and for this value position the largeness of gain is the basis of judgment or evaluation. Note that this evaluation uses assessment data from the pre-tests and post-tests expressed as amount of differences between the two.

In evaluating an instructional material or procedure, we are sometimes concerned more about growth than about competency. This is especially true when the common schools (public and private elementary and secondary schools, are the focus or locus of evaluation and when no common agreement exists about what constitutes competency in the given subject matter. In non-formal education, however, the skills and concepts being taught are commonly "practical," with observable applications and consequences. Thus it is especially important for non-formal education to accept responsibility for providing effective learning experiences and to state the levels of competency intended and to evaluate accordingly.

The lack of standards of competency in a given learning increases the difficulty of summative evaluation, especially. Summative statements in such a case are necessarily limited to comparisons (material X "does more" than material Y) and to pragmatic statements about whether or not an instructional material "works" (has effects on learners). Evaluating whether the effects it has are "adequate" to bring a person up to norms and whether the rate of change is worthwhile, in terms of cost-benefit ratio or in terms of instructional time expended, are very difficult and sometimes impossible tasks. These problems, common to valid evaluation in formal education are less inherent in skill-oriented non-formal education.

When issues regarding quality criteria (value positions) are left unresolved, summative evaluation is often diverted to focus on other and less worthy questions than the worth of the learning gained. For example, it is common to find summative evaluations concentrating on the teachers' opinions or estimates of the worth of the experience, the students' liking or disliking of the experiences and materials as reported by opinion surveys, and the use of highly subjective and non-representative anecdotes as a basis for passing judgments. This sort of evaluation is potentially misleading unless kept in its place within a more comprehensive evaluative framework.

Measurement problems also thwart well-intentioned evaluation. Especially in the affective domain, where learning is very closely geared to life-style-determining personality and value-system variables, measurement is extremely difficult. Verbal responses in the affective domain often bear little resemblance to the concomitant behaviors. ("What you are speaks so loudly I cannot hear what you say.") Verbal data on written tests or interviews rarely can be taken at face value. It is too easy to misrepresent oneself, enhancing one's ego or suppressing guilts and fears; and even when a person wants to be "open" and honest he may not be sure enough of his own feelings ("the real me") to be able to speak or write with confidence. Since unobtrusive observation of the behaviors that reflect true affect are awkward and usually very costly, verbal self-report is usually utilized to get quantifiable data. The validity of such data is always open to challenge.

Now that the accepted way to begin the design of an instructional system or component is to carefully specify the intended behavioral outcomes or objectives, another problem of evaluation has arisen. An overly-ambitious assumption tends to accompany the emphasis on behavioral objectives: If a learning objective is well-defined it is likely to be achieved.* The tragedy of this assumption is that one tends to over-expect results from a given learning experience. Behavioral objectives have a characteristic tone of finality; for example, "When confronted by the question, 'What is the sum of two plus two?" the learner will respond 'four,'" has the ring of always and forever. Experienced educators are more familiar with the tentative nature of new learnings and the distinct possibility that a learner will know something today and not know it tomorrow. The persistence of learning is not the issue here--though the research on forgetting is a sizable and important body of literature, but a tendency to ask evaluative questions that are too ambitious (too demanding) is our concern. The probability of any given brief instructional experience leading directly to life-changing consequences is remote. Thus it seems unfair if not irresponsible to take a list of intentions ascribed to a given instructional material or experience and to evaluate an instructional material exclusively on the basis of pre-test and post-test of these traits or behaviors in learners.

---

*This assumption is seen in the technologist's views that the objective should also serve as the basis for an item in the achievement test and that a well-designed instructional system is based on the realizable ideal of all appropriate learners achieving all specified learning objectives.

Instead, responsible evaluation looks at the larger scope of a series of learning experiences. Rather than picking out the miniscule contributions of some small portion of the series, such as the learning gain in a particular lesson, the particulars are better examined as they relate to some larger *whole*. Obsession with objectives at the expense of the concern for the *gestalt* of goals can result in a fragmented evaluation.

For many non-formal education programs no lists of specified instructional objectives are available: usually there are, instead, strongly worded statements of intention reflecting a set of fervently held values and aspirations. The sources of worthy questions for summative evaluation will certainly include whatever general statements may exist, yet inference and extrapolation will be needed in order to convert generalizations into appropriately specific questions. Useful questions that can lead to summative evaluation of non-formal educational experience usually can be inferred from the value positions implicit in the program or its stated goals. For example, if a value position is held that a learning experience should be *meaningful*, then it is possible to evaluate on the basis of an assessment comparing the intended messages and messages received. If the capability of a learning experience to hold the *interest* of the learner is valued, an evaluation can be based on an assessment comparing immediate and long-term recall or comparing the intended and realized responsiveness of a learner or group of learners.[*]

In strictest terms, a descriptive research is not the most explicit form of evaluative study. The constraints of time and costs as well as the difficulty of measuring the particular form of intended learning sometimes demand that an evaluation utilize descriptive research methodology rather than purely evaluative methodology. Such a study would be focused on what seems to be happening rather than on establishing an empirical or scientific case for how good or how important the learning is.

---

[*] Attention is directed to the superiority of evaluations based on this sort of direct investigation of the target audience over the indirect estimation by an intermediary person or group, e.g., asking teachers if they think the experience was meaningful for their students or if it was interesting to the students.

Sample questions of the sort that a summative evaluation might attempt to answer through the descriptive research are the following:

> Does the learning experience carry a message that is meaningful to the intended learners?
>
> Is the learning experience recognizable in relation to needs the learner sees as significant?
>
> Does the learning experience tend to cause the learner to apply himself to concepts and skills that are higher than those he currently holds?
>
> Does the learning experience affect the learner's behavior, and, if so, in a desirable direction?
>
> Does the resultant learning fit into a supportive environment in terms of the reward systems to which the learner is related?

These questions are summative in nature and their answers, in the affirmative, would seem to be basic to any claims for satisfactory performance of any non-formal education program.

Formative evaluation is somewhat easier to describe, yet the questions it suggests are so abundant as to make an exhaustive list unworkable. Virtually any information that sheds light on ways to improve an educational experience can qualify as formative evaluation. The issue for designers of evaluation is to assure responsible validity and reliability of such information. Theory becomes especially important at this point. The instructional experiences must have clear relationships with the value positions themselves. What is valued as the learning outcomes must be synchronous with the nature of the instructional experiences. Assessments upon which evaluations will be based will have to compare the actual learning experiences and the specifications of experiences that are theoretically contributory to the intended outcomes. Thus the key question for a formative evaluation of an instructional material or procedure is the following:

> To what extent are the observed experiences that result from the instructional material or procedure consistent with the theoretical model of the appropriate learning?

From this question two others are derived, and thus are established two pursuant lines of inquiry:

1. In what ways is the instructional material or procedure most deficient in comparison with the appropriate learning experiences for the intended learning outcomes.
2. What suggestions about improvement of the instructional material or procedure can be deduced from descriptions of their uses?

The first of these two derived questions is more truly within the domain of evaluation since it can be answered by comparisons of data against a value position. The second question is hardly recognizable as a classical focus of educational evaluation, but it is the crux of formative evaluation. It leads to the gathering of descriptive data about the utility of the resultant learning, the level of motivation, and the learning gains at several points in the series of instructional experiences. The particular data collected and the resultant findings are used in the creative process of improvement of the materials and procedures. Thus formative evaluation is a major means of improving learning effectiveness.

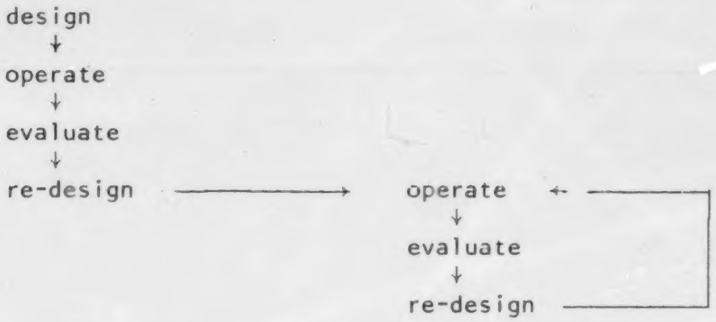
Formative evaluation is ordinarily associated with the pilot study of effectiveness of a new instructional material or with the early assessment of a new program. As such, formative evaluation is expected to lead to changes. After a program of non-formal education has been put into the field, continuing to carry on formative evaluation makes sense only if change and improvement is possible. If, on the other hand, the only decision the program will face is whether or not to continue, formative evaluation is less important than summative evaluation.

In the case of a continuing series of materials or publications of which there are to be subsequent issues (not revisions of previous releases), or programs for which there are to be follow-on or subsequent "advanced" courses, there is potentially great value in formative evaluation that leads to improvement of the series. Here again, theory is especially important. The formative evaluation must be focused on improving the guidelines and models of instruction upon which the programs or productions are based--somewhat a more abstract task and hence more demanding than the improvement of any given material program.

In order to learn as much as possible about the environments, the learning outcomes and the social consequences of a non-formal education program and in order to make useful recommendations about improvements of the program or the series, evaluation should be carried out as a vital part of the program. Descriptive procedures should be used extensively, augmented by evaluative procedures wherever the data base for assessments and the necessary value-position statements will allow.

The quest for learning effectiveness is a continuous process. Providing instructional experiences that will lead to important changes in a learner's life is a most demanding task. It is not enough that a certain experience would "reasonably" or "logically"; the real issue is whether or not the experience in fact, leads to effective learning. This issue, effective learning, requires a process of continual development, not merely a good delivery system.

The process through which learning effectiveness can be assured is, most simply stated, a series of four steps. The first and fourth steps are both concerned with design and planning, thus there are three different types of activities that can best be seen as a recurring cycle:



The design step consists of three functions:

DESIGN .... Specification of goals and objectives
Study of the target population
Planning of the instructional delivery system

The operate step consists of four functions:

OPERATE ... develop instructional materials
train delivery agents and/or technicians
develop logistic and administrative support system
activate program in the field

The evaluate step consists of six functions:

EVALUATE .. establish criteria and state value positions
collect pretext data on the target population
observe and describe the transactions (the delivery)
collect post-test data
assess (compare) data
evaluate against criteria and values

Focus on Brazil

During the spring of 1972, AID/Washington, in response to requests from USAID/Brasilia, asked Michigan State University to provide one participant for a team of Brazilians and Americans to be assigned in the field as part of a country-wide survey of non-formal educational resources. The study had been designed to identify, visit, and consult with three types of educational programs: extensions of formal education through mass media, transformations of existing formal education to effect improvement of the benefit/cost ratio through the use of instructional technology, and non-formal programs of education (ranging across basic literacy, agricultural improvement, health, and community development). The team began its work as a whole and then divided into separate survey teams of four persons each, two

Brazilians, two Americans. At the conclusion of a month-long series of visits across Brazil the combined team consulted with the Ministry of Education and Culture in Brasilia and prepared its report. Highlights of that report follow.

Some caution is in order. Such rapid expansion and developments, especially if they are successful, may quickly exhaust the resources. It is readily apparent that skilled educational leadership may already be stretched thin. Financial resources may also be soon found to be inadequate. In general, educational opportunities breed more and more demands for educational opportunities. Whether the country in question is the U.S. or Brazil, there are not enough funds to continue to provide more and more education of the ordinary sorth. Objectives as grand as those now specified in Brazil will absolutely demand non-traditional delivery systems.

Faith in technology is not well founded unless there are commitments and resources to follow through on a comprehensive basis. For example, during the period from 1955 to 1965 there was much enthusiasm for educational technology among many innovative people and agencies in the United States; yet by 1965 it had become apparent that the many years of training many teachers to a high level and building fine school buildings had created an "establishment" and community expectation of great force. These factors have seriously impeded the development of much-needed improvements in cost-effective education.

Brazil is indicating in many ways that it intends to employ educational technology to improve the effectiveness of formal and non-formal education. Already it has demonstrated its willingness to invest in varieties of modern media for education. Now the problem of using educational technology has emerged. Trained evaluation specialists are in short supply.

A by-product of this shortage of specialists in educational evaluation is a shortage of specially-designed demonstration programs. Dissemination of innovative practices could be greatly stimulated by a series of varied, clearly defined, and well-evaluated educational innovations. This shortage is ironic when one looks at the wealth of innovations now underway in Brazil. There is no shortage of programs to look at, but there is virtually no value in these many projects if one is trying to decide which model or models to adopt in another location. The problem is the lack of objective, orderly, rational and relevant data about the consequences of each program in the place where it has been started. Thus it is impossible to predict reliably whether it will have any given effect in some other place.

This last point reflects a strong conviction shared by most of the team members, Brazilians and Americans alike, that the creative spirit evidenced in so many different educational developments would be more apt to lead to lasting improvements if more thorough evaluation were made a part of each project.

The FASE Program of Community Education

Of all the projects visited, only a few could be described as effectively using evaluation for either program improvement or for summative evidences of the consequences of the educational transactions. One of those where evaluation was being knowledgably employed (though not for summative purposes) was the FASE,* based in Rio de Janeiro and operating in numerous selected sites around the country where social need was at its greatest. We asked USAID/Brasilia to investigate the possibility of our carrying on reciprocal consultation relationships with this organization. It was arranged.

FASE is an organization in which evaluation has played a significant part in decision-making. Affiliation with FASE for the purposes of further study of effective evaluation in non-formal education was undertaken through the help of USAID.

---

*Federacao de Orgaos para Assistencis Social e Educacional (Federation of Organizations for Social and Educational Assistance).

For research in non-formal education, the objectives were the following:

1. To examine and describe the history of the origins and development of FASE with reference to the role of evaluation in those processes.
2. To identify and describe the current state of development of the use of evaluation and evaluation-based decision-making.
3. To learn some of what the FASE tacticians and technicians have learned about effective transactions with impoverished people.

For FASE, in reciprocation, the purposes were the following:

1. To get consultation from specialists in evaluation design.
2. To develop, with help from specialized consultants, a comprehensive plan for an evaluation system.

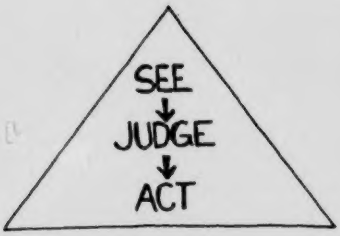
These objectives have two levels of value for the better understanding of non-formal education. First, FASE is an agency of human resource development through educational processes. Its major forms of activity within communities are intended and designed to stimulate human learning processes. Although "trainings"[*] and other teaching procedures adapted from the traditions of formal education are used, the more basic educational processes are those historically and recently associated with the non-formal education: discipleship, participatory learning, reflection and group discussions of one's own social situation, community problem identification, planning and problem-solving through action.

What is learned through this composite of experiences is related to life and to practical applications in a more vital way than ever is possible through ordinary schooling. Thus the ways in which an organization such as FASE "puts it all together" and improves its aggregate of procedures is a vital determinant of learning effectiveness. In the view of FASE leaders and technicians, no one of their procedures is effective for basic human development except as it is used as a part of a specially planned set of activities appropriate to the needs of a particular community.

---

[*] Port., "treinamentos".

Second, perhaps because of the multi-national background of the FASE staff, or, more likely, because of their rejection of sterile academic traditions and their distaste for unfounded theory in reference to real problems, an empirical style of operation has become characteristic of the most effective technicians and specialists in FASE.* FASE's empirical style of decision making is in sharp contrast with the more common doctrinaire postures of many non-formal education organizations. Thus learning effectiveness is defined in FASE as a behavioral change that has pragmatic consequences in a relatively short time span. To illustrate, in an early year, the general model of educational development advocated by FASE was represented by the following diagram:



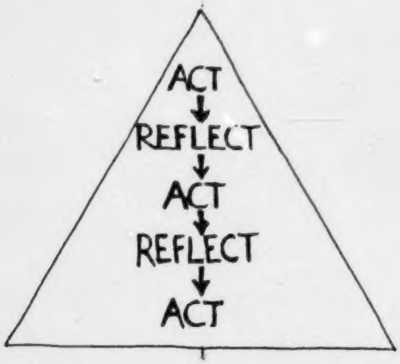
For FASE this was a working hypothesis about how effective learning would come about; for a non-empirical organization this model would have been a matter of doctrine, to be demonstrated, preserved, and advocated, no matter how little evidence there might be about its value or validity. After testing the hypothesis in the field through its use as a general guidance for technicians and as a basis for developing plans with communities, the idea of beginning with an investigative "see" phase was found to be difficult and sometimes impossible. For simple people lacking in experience in reflection

---

*For some, the rejection of academic abstractions is complete, making them--with regard to education--pragmatic activists. For others the challenge of relating theory to practice has become an intensive concern and has stimulated in them a high degree of practical intellectual development.

BEST COPY AVAILABLE

upon their own condition, lacking in a basis of comparison between what is, and what could be, lacking in experiences in which they have altered their own environment, the "see" experience was found often to be meaningless. Thus, through a process of review, evaluation and planning for change, FASE's general model became more like the following:



Example 1: A Decision to Change Theory and Policy

Since its beginning FASE has enunciated a theoretical view of effective community development. The expressions of this view have been more or less clearly stated--to some extent through a general model of development intervention, and also through the actions taken by FASE--the way of working in communities, the priorities for attention and action, and the ways in which "success" is described. This theoretical view has not been held constant. Through evaluated experience the theory has been enlightened and modified.

One common and logical premise about community development work is that the community agent (facilitator, technician, or whatever he may be called) should become very homophilic with the people he is attempting to help. This seems logically to lead to a policy of preferring that the community agent should take up his residence within the community that he is attempting to help. Such a preference was the working hypothesis within the Guanabara Region of FASE until experiences of two unsuccessful community developments were evaluated and the hypothesis of extreme homophilial preference was modified.

In the first of these cases, a technician was employed to work in the community of which he was a resident. After more than a year of work in that community, the technician left FASE to take up other employment. The FASE-related activities came to a halt. There was almost no continuity. Evaluation of the situation revealed that the technician had been so much a part of the community that dependency had been created: everything that they had done depended on him personally. It was concluded that whatever objectivity he may have gained through his training had been lost through his identity with the community. The patterns of paternalism and dependency, deeply embedded in the psychological structure of the people of that community were responsive to "one of their own" as a leader--but not to the extent of making themselves leaders.

A similar case occurred a short time later, also in Guanabara. One of the patients at a leprosarium was hired as a FASE technician. His apparent interest in the Movement of Community Creativity and abilities as a leader suggested that he would be an effective worker within the community of his fellow-patients. Even after two years he was not fully accepted among his own peers. They couldn't accept him because he showed all their own weaknesses yet had arisen in a meritocracy. He showed a limited understanding of how to effectively exert influence. Ultimately he was transferred to another center and he proved to be more effective in this new location.

As a consequence of these experiences it was decided not to encourage technicians to live within the communities. The value of objectivity in the technician and the consequent independence of the community during the development process came to be valued more highly than social integration of the technician into the community. The assessment (lack of accomplishment of objectives) and the evaluation led to the decision-making of a decision. The situation was studied and a change was made.

In this case a logical (reasonable) viewpoint about the preference for homophilic agents had been accepted as part of the theoretical basis of the procedures of FASE. Through the evaluation of unsuccessful experiences it was possible to identify this flaw in the theory and to make appropriate changes. This change illustrates the major difference between useful evaluation and useless evaluation: it would have been useless to evaluate the effectiveness of the accomplishments, or even of the technicians, in these two cases if changes had not been possible or if changes were not to be influenced by the evaluations. Useful evaluation does more than provide information--it enlightens the process of decision-making.

Example 2: Decision--New Specialists or Retraining of Technicians

In 1969, when the current Regional Coordinator began his work in Belem (the Northern Region of FASE, largely rural and village subsistence economies in tropical flood plains and forests) there were four FASE technicians at work in the Region. Within two years the work had grown to such an extent that fifteen technicians were at work. In the fall of 1971, during a periodic review, evaluation, and planning session (on site) with the Executive Director of FASE, it was determined that although the execution of work in the target communities was being handled competently, the need for over-all analysis and strategy development was becoming a task too great for the Regional Coordinator alone. Thus it was determined that one of two actions was in order: either a specialized staff member should be added to assist in the over-all development of the Regional programs or a series of new specialized skills would have to be learned by the technicians already on the staff. The first option was taken and a sociologist was brought onto the staff from Pernambuco (a similar region in the northeast of Brazil).

The objectives of this change were defined. Specifically, the sociologist was to provide assistance to the Co-ordinator and to the technicians; the assistance was to be focused on deeper understandings of the communities, more specific long-range planning, and more carefully matching of resources to community needs.

After several months it was clear that the objectives were not being met. The major problems were identified: the sociologist was not working well with the technicians; further, his background of experience was not appropriate. The sociologist would need much more time to develop understandings and sensitivities before becoming effective in the ways specified as objectives. The relationship was terminated.

Another session for review, evaluation and planning was held. The alternative decision was reconsidered, and a plan was established for providing support and opportunities for presently employed technicians in the region to get the training (through short courses and in-service education) that would enable them to fulfill the objectives collectively that had been earlier assigned to the sociologist. Thus training and new experiences were sought and engaged in--ultimately by nine of the technicians. The training was provided through SUDAM (development agency for the Amazon), in Rio, and by on-the-job self-instruction. A variety of specialists was created by this process. These were specialists who already knew the job of the generalist (the technician), already knew the communities and the region, and could readily find use for their new skills and knowledge in their own work and in the work of their colleagues. Subsequent evaluation indicated the achievement of the objectives.

In a region where there is a shortage of highly trained specialists who also have practical skills in applying their training, the question about strategy for staff expansion is particularly difficult. Whereas the logic of this case argued for hiring of a specialist in order to accomplish the objectives sooner, evaluation after the first experience showed that the time required for induction of the new specialist was much greater than had been planned. Thus there was a serious discrepancy between the intended outcomes and the actual outcomes. Because of FASE's tradition for basing decisions on evaluation, the mistake was not repeated. At the second decision-point, the alternative decision was made. Thus, in this case, an informal process of review, evaluation, and planning made use of a descriptive data gathering procedure to allow evaluation of accomplishment against intention. Because alternative procedures had been previously identified and considered, the organization was not limited to the more common expedient of "if at first you don't succeed, try, try again."

Example 3: Helping Communities Make Decisions Based on Evaluation

After three years of community development activity in an impoverished suburb of a port city in northern Brazil, a wide variety of related projects were on-going. Paving projects, small land reclamation projects, community enterprises, short-courses, mothers' clubs, water filtration in homes, and so forth. During one of the quarterly on-site evaluation sessions, the FASE technicians and specialists along with the leaders of the community participants came to a point of realization that all these many activities were rather superficial; even though the individual projects were related to real needs and were relatively successful in and of themselves, they were unable to affect more serious, more basic problems and issues that tended to hold down the community. (Such "moments of realization" have been commonly reported by FASE technicians and by other similarly engaged in community development.) At this session three problems were identified as basic: water control (the suburb is set on the shallow marshes at the edge of a tributary to a major river rather prone to flooding), education, and employment. These three seemed so large as to defy efforts to deal with them, but through the insights and self-realization gained through successes on smaller, more manageable activities, the people of the community were able to evaluate their true condition and to begin consideration of these more basic problems. Study commissions were established within the community. Three activities were undertaken by the commissions: collecting more information about the realities of each of the problems, considering alternative ideas about solving each problem, and establishing contacts with appropriate prefecture agencies. Thus was begun a series of basic problem-solving exercises wherein the stake was human life and welfare, and the hope was in the validity of an evaluation, decision-making, and re-evaluation model of planning activity.

Options identified in reference to the water problem are still being compiled and analyzed, though the prefecture has provided temporary forms of assistance. The two major options seen in reference to the education of children are (1) persuasion of the government to provide this community a school building, equipment and teachers, and (2) building the school as a self-help activity. Although the decision has not been made, the commission has come to realize that the latter alternative leaves unresolved the problem of the costs of maintaining the school. The commission on the employment problem has undertaken with FASE to contract for a team of analysts to make a survey of the employment patterns within the community (employment, unemployment, reasons for unemployment, abilities of the unemployed, etc.). This survey will be interpreted in light of a subsequent study of the market and employment characteristics and potentialities of Belem.

Since FASE uses evaluation in its own organizational decision-making, it is in a good position to help communities also to do so. Unlike the fabled professor who says, "Do as I say, not as I do," FASE technicians are themselves participants in organizational decision-making based on evaluation. Thus they do and they say. Their message and their medium are highly consistent. Such an experiential background is highly desirable if effective use is to be made of an expanded evaluation process.

The major goal of our work with FASE was the development of an integrated system of evaluation. Because of FASE's substantial tradition and history of linkage between informal evaluation and programmatic change, and because of the recent establishment of an evaluation group within the central office of FASE, the directorate of FASE and representatives of the University agreed that circumstances were right for building a comprehensive evaluation plan. This plan was to have several important characteristics: it would be focused on formative evaluation; it would stimulate evaluative procedures at the regional and local level (rather than being exclusively a function of the central administration, it would encourage communication between the central personnel, especially the technical specialists--including the evaluation group--and the staff operating in the field, and it would provide for the orderly building, refining and revising of the theoretical framework and practices of FASE's operations.

The achievement of objectives toward this goal began long before the direct participation from North America. The development of a quarterly report procedure through which technicians in the regional units were to make input to the evaluation group was the first operational step that led to a coordinated system of evaluation. Unfortunately, as is usually the case with a comprehensive instrument that asks many detailed questions, the resistance of those who were to respond to the quarterly report was overwhelming. The original quarterly systems as developed by the FASE evaluation group was actually used by only several persons. It was realized that the technicians in the field and the regional coordinators would need to be more substantially involved in the evaluation system--probably involved in its design and able to see what it would do to help them be more effective in their work. It was discovered that the structured evaluative activities were not nearly so well coordinated with each other as had been assumed. Each of the three major on-going evaluative activities had been undertaken for a different purpose, each had a different methodology; and to some extent, each was based on a different set of assumptions about the significance of FASE as a community development agency.

The *evaluation of training procedures* in a sample of 10 or 20 sites had been obligated as a condition of a grant from a foundation; how its findings would be integrated into the operational procedures was not clear. The *anthropological study of impact in two communities* was conceived as a separate activity to provide insight into FASE's impact on community infrastructure. The *quarterly report*, to be filed with reference to a convenience sample of communities where programs are underway was evidence of an anxiety in the main office of FASE to secure more evidences about activities in the field. Thus each of these three promised no external validity, no generalizability to

FASE's work as a whole, and no strong promise of conversions into a total system of evaluation. Worse yet, none of the three was precisely focused on any particular management or design issues that are under specific scrutiny. The probability of deriving any basis for significant alteration of FASE's concept of community development, appropriate methodology or worthy outcome objectives seemed low. Perhaps the anthropological study of two communities might provide more useful data than all the rest, but their meaning--if generalized beyond the immediate communities--would demand insight and care of the highest order on the part of FASE's central planners.

An Evaluation Plan for FASE

Upon undertaking the first steps toward the development of an evaluation program, the FASE leadership people observed (without suggestion from the consultant) that a statement of the theory underlying their program was needed. Program descriptions are readily available, well documenting the way FASE programs are carried out, but nowhere does a comprehensive rationale statement exist. Like many another community development project, the concept and operating theories exist in the minds of the leaders and the technicians. They say, likely with much truth, that experience has shaped and reshaped their thinking about how to do the job--indeed, what the job is!

Conversations with the FASE people suggest that in their minds is the residue of an earlier "assistance" model. Occasionally the conversation mentions "help them with their problems," "give them what they need," "show them their situation," and the like. Almost always, these are caught in mid-speech and altered to reflect a more developmental view of the problem. The experienced leadership people seem thoroughly attuned to the view that people who lack vision lack motivation. They both talk in terms of the need to begin by helping people see themselves and their situation more clearly.

They talk in terms of changing people's attitudes through altering the "psychic reasons" underlying the attitude. They see the possibility that people's experiences (behaviors and resultant rewards) may be the origin of most of the "psychic reasons." To what extent can the theoretical view of the problem and its solution be kept out of the evaluation design? Should it be kept out? And if it shouldn't or can't be, how can safeguards be erected against the imposing of preconceptions that obviate new and creative solutions?

Two evaluative frameworks are apparent: first, FASE as a whole development procedure and investment of resources demands a macro view of evaluation. How well is FASE achieving its stated objectives? What are its consequences in comparison to its intentions and its promises? The second framework can be related to each of the individual project activities within FASE's set of activities. To what extent is each project achieving its promises? How well does each project compare with other FASE projects, present and past? What are the peculiar variables or conditions that make it more or less successful than the norm?

With reference to the macro framework of evaluation, the basic problem is lack of standards or outside bases of comparison. With what can FASE be compared? Another difficult problem concerns the difficulty of determining a criterion or even a measurement concept to apply to the product. How does one quantify changes in human dignity and self-esteem? How indeed, among people who cannot be pretested and must be post-tested in terms of highly subjective indicators!

With reference to the micro framework (evaluation, project by project by project) is anything more basic than the assumption of differences in precedent conditions existing in each project site? How can microevaluations assure that the pre-testing or other predescription recognizes the probably important conditions at the beginning of each project? One of the important issues here is the inclusion of certain evaluative procedures as integral parts of the treatment conditions themselves. For example, studies of the reality of preconditions (antecedents) are also included as part of the intended treatment.

BEST COPY AVAILABLE

The model following suggests the basic data needed for the evaluations.*

	INTENTIONS	ACTUALITY (Empirical Reality)
Preconditions	Antecedents (what we think things and target people and their situations are like) (our view of the need and the potentialities).	Antecedents: (what the target people and their situations are really like.
Delivery of Treatment	Interventions (what we intend to do to affect the situations and the target people) (our design).	Interventions (what we actually do that affects the situation or the target people.
Consequences	Outcomes (which we intend to have happen because of our interventions) (our view of the desirable product).	Outcomes (what really happens because of our interventions).

Figure 5.--The Six Major Cells of Information Needed for Comprehensive Evaluation.

Evaluation, in the older "scientific" models, was based primarily on measurement and assessment of outcomes. The evaluator's efforts were judged worthy if he was able to provide an objective assessment of the consequences of an educational endeavor in light of either the objectives originally specified for the program or some quantified description of the need toward which the program was directed. The major flaw in such an approach is its inability to do more than provide data on the degree of successful achievement of specific objectives; and, inevitably, lose sight of the other outcomes and the meaning of the situation as a whole.

---

*Adapted from Robert E. Stake, 1967.

Guidelines for Comprehensive Evaluation

The first period of consultation and training resulted in a plan for the comprehensive evaluation. Following are excerpts from the report of that series of conferences.

> Preface:
>
> Community development is one of the most complex forms of nonformal education. Every situation is different; the learners are intact groups (though usually more like non-cohesive clusters at the beginning); the goals and objectives of the learning processes depend to a great extent on the learners' own views of their needs and capabilities; the procedures for working with a particular community must be largely created for each situation; and the assessment of change must rely on remote and unreliable indicators.
>
> Into this unwieldly mass, educational evaluators rarely venture. There are no standardized tests, no proven indicators, no reliable pretested methods or instructional materials. Discovery is as important as evaluation, and when evaluation competes with discovery or when evaluation inhibits discovery, evaluation is not helpful. Thus the task is to design evaluation procedures that will increase discovery and stimulate creativity. Such evaluation procedures must, in the final analysis, be created by the people who will use them. Their sensitivities, sensibilities, awareness and insights must be the basis of deciding what factors should be evaluated, where to get the data, how much credibility the sources have, etc.
>
> Observations and Suggestions:
>
> 1. An evaluation system is needed. There are good evidences of uses of evaluation in the decision-making and continuous improvement of FASE. At this time when several large evaluations are being planned and carried out, the

time is perfect for designing a comprehensive system. If it is not designed and put into effect, the various evaluation efforts may become scattered, each taking a somewhat different direction and thus making theory development even more difficult in the future.

2. The FASE operations are very complex. They are, altogether, too diversified and widely scattered to evaluate in comprehensive and reliable ways as a macro-system.

3. For now, the evaluation system can be usefully built on a set of micro-level reportings, discussed interactively at the regional level, assessed and evaluated at the national level, providing the basis for practical feedback to the regional technical team level. Since such a system is easily biased by "voluntary" reportings or by convenience samples, a specific plan is needed to represent a particular variety of programs and projects (to be reported from each region and in the same way from each region). The minimum of such reportings would seem to be the following:

a. An activity representing the best of on-going comprehensive programs in the region;

b. An activity in which significant problems have been encountered; and

c. An activity in which the outer edges of confidence are being expanded and tested.

4. The largest meaningful macro-level of evaluation is probably the regional level. It should someday be possible to generate data that will allow assessment of one region in comparison with another. (We do not suggest this as an early goal for the evaluation system, because there is not enough experience yet with any system of key indicators.)

5. The national evaluation group should conduct its operations in such a way as to be a worthy model for the evaluation and refinement activities of the Regional Coordinators. We know that examples and models of behavior in real life are one of the more effective dissemination procedures. The way of professional life in which evaluation is used as a basis for continuous improvement is already characteristic of much of FASE's operation; this characteristic should be preserved and extended.

6. A vital part of the evaluation system is the development of the theory and operational principles that the organization is developing. Evaluation and theory-development must be carried out together.

7. Theory development will require "inputs" from the evaluations, but it must start with something. (You can't make "inputs" to something that doesn't exist!) As a significant step toward theory development a "Manual of Theory and Practice in FASE" could be written. Surely many of the national-level technical teams and the Regional Coordinators would have valuable statements to give to this compilation. Work could begin on writing this almost immediately.

General Objectives of the Evaluation System

a. Theory (testing and refinement of)

b. Describing processes and procedures as they develop; Assessing accomplishment

c. Feedback (cycles of information to technicians, coordinators, specialists, and administrators)

I. "Pioneer Project" Reporting

1. Definition: Specific information about a project or program that is new, experimental and important.

2. Objectives:

2.1. Theory:
- Developing new information.
- Testing procedures in new situations.

2.2. Describing and Assessing:
- Describing new methodology and techniques.
- Expanding the typology of community characteristics (groups) and needs.
- Assessing the results of interventions.

2.3. Feedback:
- Discussions, analysis and suggestions of all the teams in the region.
- Descriptions to other interested regions.
- Descriptions to national specialists.
- Responses to originators to increase the awareness of the technicians.
- Creating new instruments, procedures, and techniques.

3. Characteristics (Criteria):

   3.1. Experimental applications of theory to particular communities.

   3.2. New procedure or new situation in which procedure has not formerly been applied.

   3.3. Potentiality of making discoveries that can be applied in other situations.

   3.4. Importance can be anticipated for more than one region.

4. Results Expected:

   4.1. Basis for evaluating FASE's probable success in the particular kind of situation or procedure.

   4.2. Basis for evaluating success of the intervention.

   4.3. Providing indications of trends
      - Intensity of participations in social process
      - Diversity of social groups reached
      - Depth of community problems treated
      - Other important indicators of basic community awareness.

II. "Key Project" Reporting

1. Definition: Specific information about a program within a particular community, viewed as an ecology, with reference to one project that best represents the key to development within that community.

2. Objectives:

   2.1. Theory:
      - identify important elements for the educational process
      - verification and reconfirmation of theory
      - better understanding of relationships among parts of a total program.

   2.2. Describing and Assessing:
      - relationships among parts of a program
      - acceptance, rejection, involvement, dissemination within the groups
      - relate the objectives of the whole program with the diagnostic view of the community and the region.

2.3. Feedback:
- provide the regional team with a basis for discussion about program improvement
- provide regional and national specialists with a basis for providing services
- provide a basis for recommendations at regional and national levels about changes in focus or emphasis in the program.

3. Characteristics (Criteria):

3.1. A project or other specific aspect of FASE work with one community which is thought to be the vital or crucial center of focus for the program.

3.2. Most other aspects of the program are influenced by (or have influence on) this "key project".

3.3. Is within the most comprehensive program of the region.

3.4. Is seen as exemplary in qualitative concern for procedures, results, and theoretical basis.

4. Results Expected:

4.1. Provide basis for evaluating inter-relation of activities, technical services, etc.

4.2. Provide basis for evaluating effectiveness of planning.

4.3. Provide indicators of vital factors.
- Degree of community participation in selection, planning, execution
- Degree of depth of the program
- Degree of community organization.

III. "Problem Case" Reporting

1. Definition: Specific information about one project or program which has been distinctly unsuccessful so far or a case of failure.

2. Objectives:

2.1. Theory:
- identify inadequacy of theory
- identify flaw (error) in theory
- identify misapplication in theory

- identify gaps or openings in theory
- identify (define) limits of the effectiveness of the organization.

2.2. Describing and Assessing:

- describe discrepancies between expectations and actualities
  (1) pre-conditions
  (2) procedure
  (3) consequences

2.3. Feedback:
- provide stimulus for regional team to evaluate itself
- provide national specialists a basis for giving needed advice and services
- modify procedures and methodology
- modify technical assistance
- modify criteria for selections of groups and areas
- modify scheme instruments for studying
- modify social reality

3. Characteristics (Criteria):

3.1. It is a project or activity which has been considered by the regional team.

3.2. Project or activity should have been going on for at least one year.

3.3. Project or activity had been planned with definite objectives and procedures.

3.4. Project or activity was not an isolated or unrelated activity.

3.5. Project or activity which has encountered insurmountable difficulties.

4. Expected Results:

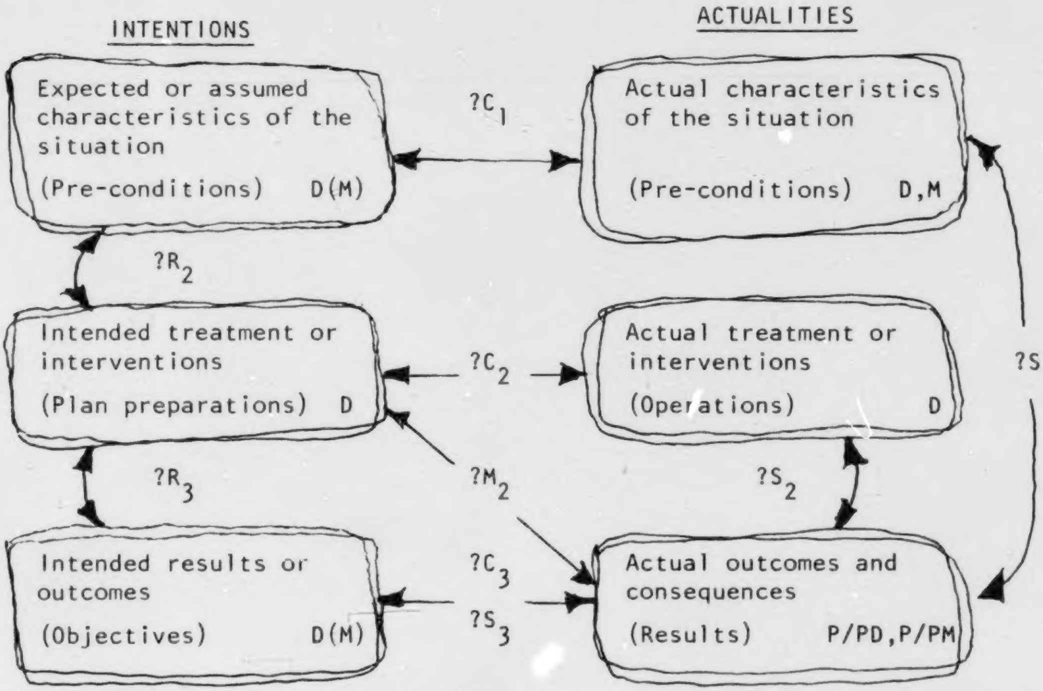
4.1. Stimulus for regional team to evaluate its work in specific terms.

4.2. Basis for providing technical assistance by the national team.

4.3. Procedure for discovering the cause of failure and difficulty.

4.4. Basis for proposing improved procedures.

4.5. Reduced probability of repeating failures.


INTENTIONS
ACTUALITIES
Expected or assumed characteristics of the situation
(Pre-conditions) D(M)
?C1
Actual characteristics of the situation
(Pre-conditions) D,M
?R2
Intended treatment or interventions
(Plan preparations) D
?C2
Actual treatment or interventions
(Operations) D
?S1
?R3
?M2
?S2
Intended results or outcomes
(Objectives) D(M)
?C3
?S3
Actual outcomes and consequences
(Results) P/PD,P/PM

The Basis of Formative Evaluation:

Questions for assessment during planning and replanning:

1. Questions of Relationship (R)

?R_1 Are the objectives appropriate for the situation?

?R_2 Is the plan realistic and appropriate, considering what are assumed to be the characteristics of the situation?

?R_3 Is the plan realistic and appropriate, considering what outcomes and results are desired?

2. Questions of Congruence (C)

?C_1 Is the situation actually the same as had been assumed? (Also see ?M_1)

?C_2 Is the intervention or treatment being delivered or provided in the way and to the extent planned? Should it be?

?C_3 Are the outcomes the same as the objectives? Are the outcomes inadequate? Are they appropriate? Are results occurring that are not intended or desired? (Also see ?M_2)

3. Questions of Modification (M)

?M_1 On the basis of what is learned about the situation from actual experience, what changes in the plan should be made?

?M_2 On the basis of what actually happens, what changes in the plan should be made?

The Basis of Summative Evaluation:

Questions for assessment of outcomes:

Questions of Summative Evidence (S)

?S_1 What changes in the situation have occurred during the time of the intervention or treatment? Are these changes satisfactory?

?S_2 Is there evidence that the changes can be attributed to the treatment rather than to some other factor?

?S_3 Do the changes conform to the planned objectives? (Also see ?C_3) Is this satisfactory?

Modes of Data-Gathering

(See code-letters in lower right corner of each box.)

D: Descriptive data--emphasis on full verbal and graphic representation.

M: Measurements--quantitative data on vital indicators (measurement data typically supplements to descriptive data).

P/P: Pre- and post- with reference to either description of measurement data, the need to get data from two (2) or more points in time in order to discover change.

Value Concepts:

Each of the truly evaluative questions in the list above contains an underlined word. These words show that a value concept must be brought into consideration in order to place a value on the assessment. "Good" or "bad," satisfactory or unsatisfactory are value judgments, not assessments. The assessment is only a comparison of two measurements or two descriptions; evaluation is a value judgment about the quality of the meaning of an assessment.

Subsequently, the evaluation group developed operational forms to implement this plan. Through their experiences and trial uses of several of the procedures, changes were made in some particulars. The major particulars of the report of the evaluation group after their operational work follows:

Four (4) elements seem to be essential within the evaluation:

A. Training purposes
B. Training contents
C. Training resources
D. Training results.

Each element is represented by key indicators.

INDICATORS

A

0.1. Phenomena that determine the purposes of the training

0.1.1 Diagnosis of educative intervention in terms of the needs in the area.

0.1.2 Diagnosis of educative intervention in terms of needs in the community.

0.1.3 Concept of meeting needs that underlies the training.

0.2 Decision process that led to the training

0.2.1 Decision origin

0.2.2 Standards that directed selection of participants

0.2.3 Material resources mobilization

0.2.4 Techniques resources mobilization

0.2.5 Financial resources mobilization

B TRAINING CONTENT

0.1. Nature of content

0.1.1 Information specifics

0.1.2 Sources of information

0.1.3 Quantity of information

0.1.4 Group's product

0.2. Psycho-pedagogical factors

0.2.1 Didactics or approach medium

0.2.2 Group's productivity

0.2.3 Group's integration process

0.2.4 Definition of functions and/or responsibilities

	INDICATORS
C	TRAINING RESOURCES
0.1.	Resources of the Environment
0.1.1	Local conditions and influences
0.1.2	Temporal conditions and influences
0.2.	Material resources
0.2.1	Quantity and quality of availability material
0.3.	Human resources
0.3.1	Participants, quantity
0.3.2	Social/economical/cultural characteristics of participants
0.4.	Technique for use of resources
0.4.1	Coordination and curriculum
0.4.2	Teachers approach to capacitation
0.4.3	Materials and their improvement
0.4.4	Control of execution
0.4.5	Administrative organization
D	TRAINING RESULTS
0.1	Immediate results
0.1.1	Information gains
0.1.2	Instrumental and skill gains
0.1.3	Work plans produced
0.2.	Difference between training intentions and actualities
0.2.1	Origins of failure
0.2.2	Origins of failure
0.2.3	Influence of unforeseen agents
0.3.	Pursuant results (transfer)
0.3.1	Group's level of achievement in follow-up of the training
0.3.2	Population directly reached
0.3.3	Evidence of use of the educative intervention

INDICATORS

D TRAINING RESULTS (Cont.)

0.4. Differences between anticipated and actual activities
0.4.1 Origins of unsuccessful activities
0.4.2 Origins of successful activities
0.4.3 Influence of unforeseen agents

0.5 Induced effects

Evaluative Standards

In Relation to the Training Purposes:

- Was there serious discrepancy between the general purposes of the training and the purposes of the educative intervention in the area?
- Was there serious discrepancy between the general purposes of the training and the aims of the educative intervention in the community?
- Was there close relationship between the particular purposes of the training and the community need that caused the training's origin?
- Did the group take part in the search for resources for the training?
- Did the community participate in the study of its resources?

In Relation to the Training Content:

- Did the content correspond to the training purposes?
- Was the information sufficient to satisfy the needs of the group being trained?

- Did the intellectual product of the group add new elements to the available information?
- Were the intellectual, educational and affective characteristics of the people being trained taken into consideration in the handling of information?
- Was the productivity of the group enhanced by the approach to content?
- In what ways was the relation between individual apprenticeship and group integration considered?
- Did the structure of training functions contribute to the group's autonomy and the task's fulfillment?

In Relation to the Training Resources:

- Were the mobilized material resources sufficient to achieve the aims?
- Did the environment conditions contribute to reaching the purposes of the training?
- What effects resulted from the participants' homogeneity of heterogeneity?
- Did the coordination and teachers' capability level match the group expectation and the demands of the educational intervention?
- Did the use of didactic material ease the apprenticeship process of the group?
- Was use made of feedback from the evaluation done during the training?

In Relation to the Training Results:

- Did the group elaborate work plans by the end of the training in order to assure the continuity of educative intervention?
- Did the final evaluation of the training indicate its success or failure (achievement or non-achievement of the goals of the program)?

Instrument development and procedures recommendations were subsequently developed regarding the instrumentation for this system of comprehensive evaluation for FASE. Details of those recommendations follow:

"Pioneer Project" Reporting

Instruments Needed

1. Nomination form:

   Purpose: To select appropriate Pioneer Project

   Procedure:
   - a. Regional Coordinator suggests one project and gives brief description.
   - b. National Evaluation Team decides if suggested project meets criteria for Pioneer Project
   - c. If so National Evaluation Team sends copy to each other Regional Coordinator
   - d. Each Regional Coordinator decides if he is interested in having information about the suggested project as it develops.
   - e.* If one or more Regional Coordinator says "yes," the project is declared to be a Pioneer Project.
   - f.* If not, Regional Coordinator is asked to suggest a different project.

2. Initial Report (Description of Pioneer Project):

   Purpose: To describe the Pioneer Project in detail and to stimulate a feedback process at regional and national levels.

   Procedure:
   - a. Technical team actually working in the Pioneer Project fills out the Initial Report form.
   - b. During next monthly regional meeting entire regional team discusses the Report, discusses the Pioneer Project and makes suggestions.
   - c. Form is then sent to National Evaluation Group and to other regional offices.
   - d. National evaluation group makes analysis, informs technical specialists of needs revealed, prepares critique.
   - e. Critique is sent to Regional Coordinator and discussed with Pioneer Project team.

---

*Same procedure to be used for "Key Project" Reporting.

3. Progress Report of Pioneer Project

Purposes: To provide additional information on the development, problems, accomplishments and experiences of the Pioneer Project to continue the feedback process at regional and national levels.

Procedure:
- a. When any significant change or new step in the Pioneer Project occurs, the project team fills out a Progress Report form.
- b. At the next monthly meeting of the regional team the report will be presented and discussed by the entire regional team.
- c. The Progress Report is then sent to the National evaluators and to the other regions.
- d. The National Evaluation Group makes analysis, notes needs, etc.
- e. A critique is sent to the Regional Coordinator for discussion by the project team.

"Problems and Failures" Reporting

Instruments Needed

1. Problem Report Form

Purposes: To provide information about difficulties so that technical help can be provided;

To stimulate a feedback procedure within the regional team and at the national level;

To identify flaws in the operating procedures.

Procedure:
- a. At 6 month intervals, the Regional Coordinator is to give one day of the monthly meeting sessions to a review (with the entire regional team) of the most serious problems in particular projects.
- b. One of these problem cases is to be selected for reporting.
- c. The technical team for that project will prepare the report with the Regional Coordinator.
- d. The report is sent to the National Evaluation Team for analysis critique. Specialists are advised of needs.
- e. A commentary is sent to the Regional Coordinator for discussion with the technical team.

f. The technical team is to attempt to apply the advice given and report to the National Evaluation Team on the "Follow-up Form."

2. Follow-up Form (Problems)

Purpose: To provide feedback to the National Evaluation Team regarding the usefulness of the advice given and the consequences of having put it into effect.

Procedure:
a. A blank copy of this form (matrix) is sent to the Regional Coordinator accompanying the advice and comments on the Problems Report.
b. After two months or less, the technicians involved in the Problem project are to fill out the Follow-up Form.
c. The Follow-up Form, as prepared by the technicians is to be discussed by the whole regional team.
d. The Follow-up Form is then sent to the National Team.
e. If further advice and comments are needed, the whole procedure can be repeated.

3. Failures Report Form

Purpose: To provide information about the difficulties which have caused an activity to be stopped;

To provide basis for making connections in the theory and practice of FASE operations within such situations;

To stimulate discussions and feedback at the Regional and National level about activities in which serious difficulties have been encountered.

Procedures:
a. At six month intervals, the Regional Coordinator may file a "Failure" report instead of a "Problems" report if his regional team would prefer.
b. The procedure for the "Problems" report is followed.

Acknowledgment

The steady growth, widespread public acceptance and evident effectiveness of FASE are in no small part a product of leadership policies. One should bear in mind that FASE is not an instrument or vehicle of government-sponsored relief or welfare, not is it an endowed organization assured of continuity no matter how inept its efforts may be. The very life of FASE depends on its rendering recognizable valuable services. In fact, considering the level of dedication of so many of its leaders and technicians, it is hard to imagine any perpetuity of the organization except as it continues to prove itself to be a workable vehicle for true community development.

Technical Recommendations

Field experiences in consultation to non-formal education have led to several conclusions about the state of the applied art of education:

1. A general awareness of the importance of evaluation is common among leadership people in non-formal education.
2. There is more willingness than available skill in designing and carrying out evaluations.
3. Evaluations typically lack adequate focus on the factors that are most likely to relate to possible program improvements.

In order to provide some assistance in light of these realities, this section of the chapter contains a series of suggestions. Some of the more common weaknesses in typical designs are identified and suggestions for improvement are offered.

Evaluation for non-formal education has two basic purposes. First, evaluation can provide a basis for making modifications and improvements in the learning exercise. The second set of purposes for which evaluation is done is the more classical--determining how effective the learning experiences are.

What to Evaluate?

Evaluations of a non-formal educational activity should give account of three aspects of the instructional materials delivery systems and learner's experiences. First, as would be the case with any educational evaluation, there must be a concern for what has been learned. Learning is typically evaluated in terms of the change in the learner which can be credited to the given instructional experience. This first aspect of evaluation is concerned with the gain or changes in content knowledge (and all other significant aspects of learning) which can be seen as a consequence of the particular program. A taxonomic approach to learning--concern for the specific kinds and levels of cognitive, affective and psychomotor learnings--is usually required. The second aspect of a non-formal educational activity or program that should be considered for evaluation is motivation. Motivation, in this sense, is concerned with the degree to which an instructional experience relates to the interest and is able to hold the interest of the learner. The third aspect of a non-formal learning experience that must be evaluated is the crucial concern for *transfer* of learning. Although much of formal education evades the test of demonstrated positive transfer of learning to the assumed equivalent tasks of life, concern for transfer is often the primary reason for a non-formal educational activity or program. Thus it is incumbent upon designers, and administrators of non-formal education to be concerned with transfer of learning when they are planning an evaluation program.

Evaluating Learning

Although it is more common to evaluate learning by giving a test at the end of a learning experience, any valid claims about change in the learners must be based on comparisons of data from tests or observations at the end of the experience and comparable data from the beginning. Thus a pretest/post-test approach to evaluating the learning increment is indicated. There should be a high degree of consistency between the stated objectives for the experience and the items to be examined in the pre/post testing routine. (Typically, in a well-designed instructional program it is possible to infer the objectives by examining the tests or to project the tests by examining the statement of objectives.)

One of the commonly overlooked concerns in evaluation of gains in learning is the possibility that learners may be regressing in some important area while they are apparently gaining on the intended learning. The classical example in formal education is the tendency of students to grow to dislike arithmetic even though they may be gaining computational skills through continued exposure to arithmetic instruction. A comprehensive evaluation of learning should give some attention to the sorts of "bad learnings" or unintended accomplishments that may accompany a learning experience. This can be accomplished by providing for a monitoring (in the pre/post testing) of crucial concomitant learnings that should not be allowed to regress or develop in the wrong direction as a byproduct of the instructional experience.

Evaluating Motivation

Evaluating motivation can be accomplished best by observing learners of different sorts while they are engaged in a learning experience. Often the observer can pay attention to the levels of interest and the points in the game or simulation at which interest lags or the students become disengaged from one another or from the experience itself. It is helpful to make a chart, blocking off on the horizontal the various phases of the instructional experience, and to mark a series of points representing highness and lowness of interest at many points in time. Thus it is possible to derive a relatively reliable picture of the rising and falling of apparent interest during each phase of the experience. A simple graph can be produced using several colored pencils to represent the interest level of several students under observation. Another commonly used technique for evaluating motivation is to ask participants to write their level of interest or to respond to questions that ask specifically about their interests in, as well as enjoyment and satisfaction derived from, various parts of the instructional exercise. It has been our experience that, in general, students are able to add significant information through this sort of questionnaire or open-ended response to questions about motivation, interest and enjoyment. But such information is not a substitute for direct observation of a group of students engaged in the experience under conditions for which it was designed.

Evaluating Transfer of Learning

It may seem unfair to insist that non-formal education be concerned with transferability. Certainly formal education is rarely called to account for transferability of learning from the school environment to the real world. Nevertheless, it has been accepted that non-formal education's very justification lies in its high degree of life-relatedness. So a concern for evaluating the transfer of learning is required. If non-formal education is used in order to increase the relevancy of learning to the real world, designers and program administrators should determine that, in fact, such a claim is valid.

The most valid tests of transfer of learning would necessarily be done in longitudinal studies. Testing the learners as they encounter the real situation for which the instructional experiences had supposedly trained them would be required. But since the moment of encounter with the real world equivalent may be months or years later, a longitudinal approach, while ideal, may be impractical. (It is just this impracticality that has been used historically to exempt the school from answering the tough questions about the relevancy and the transferability of learnings gained within formal education.) Thus a second approach can be used when longitudinal studies are impractical; simulation is designed so as to test the application of skills gained in the learning experience. In other words, the transfer of learning gained in a particular instructional experience is assessed in terms of the degree to which the student can competently deal with problems in a new but related situation. Thus while some simulations have training as their primary purpose, others have as their primary purpose the evaluation of the learning from a previous experience.

Distinctions Between Formative and Summative Evaluation

With reference to the evaluation of learning (content acquisition), both formative and summative evaluation is indicated. Of primary concern during the development of or the refinement of an instructional strategy or program is evaluation that indicates which of the learnings are being accomplished and which are not and what sorts of participants are learning and what sorts are not. Such information should be made available from a formative evaluation so that designers can take steps to make corrections or adjustments as indicated by the patterns of strengths and weaknesses in the learning experiences. From a summative point of view, evaluation of learning is necessary in order to establish the validity of the experiences or program in terms of its potentialities for achieving its claimed learning objectives. Whether or not to use a particular instructional experience again is decided by summative evaluation. Summative evaluation is also useful to determine what auxiliary experiences must be provided in order to broaden the learnings and to clear up the less well accomplished objectives.

Summative evaluation, especially if derived at several different points during an experience, is also useful as an instructional input to the learner. As the learner gets information on the results of his actions and decisions he becomes more fully a party to the whole learning process, making changes and corrections as needed to more fully accomplish his own learning objectives.

Most evaluation of motivation is done for formative purposes. Such evaluations are very helpful in the refinement of an instructional experience, assuming that the designer is free to rebuild or redesign so as to keep the interest level higher. As a summative evaluation, indications of the observed motivation level of the experience can be useful in making decisions about whether or not to use it for particular groups.

Evaluations of transfer of learning can serve both formative and summative purposes. For both they serve as the crucial indicators of whether or not the experience in its present form will be justified in terms of cost and time as the educational intervention leading toward a certain competency in the real world. For the designer, this sort of information--usually derived from a research study of the relationship of learning acquired in the exercise of the learning demanded in the real world--is extremely useful in the redesign of a faulty learning experience. Data concerning the degree of transfer can also be used as a basis for making the decision about whether or not to use the experience.

How to Evaluate?

Evaluation demands both measurement and valuing. Measurement requires the use of a procedure to quantify--to provide an objective description. Valuing requires a procedure for assessing the objective description in terms of its worth--to allow the objective data to be related to some basis for determining value and significance.

Most educational evaluation is concerned with assessments (comparisons). Often the basic concern is for assessment of the consequence of a particular educative procedure. Sometimes the comparison is between two (or more) educative procedures or experiences. But in any case, the evaluation is incomplete until what is is related to what is desired or intended.

Scientific methods of analysis, description, and prediction make their greatest contribution to educational development through the procedures of evaluation. Curriculum decisions are of two basic sorts: (1) the what, when and how, and (2) the why. Scientific methods of evaluation can provide considerable help with the former set of questions, but the help is most useful within a context of values arising from the continued analysis of why--the reasons, the intentions, the goals, and the beliefs about what is important.

Thus the application of scientific methods of data gathering and analysis are relatively easy to relate to the what, when and how questions. But evaluators must not stop here; there are ways to apply scientific investigation procedures to the data underlying the why decisions as well. The major questions in this sector--the valuing sector--deal with who has the responsibility for setting goals, how well are the goals clarified and communicated, and how responsive the system is to the goals.

The following series of questions and problems indicates something of the range of issues to which any thorough evaluation must be related. A sequence is implied in the list, but the particular situation in a particular evaluation project will usually demand alteration of this sequence. The major purpose of this list is to make the evaluator more aware of the many factors that impinge on an educational program, thus he can be more alert to the unchallenged assumptions and the inquiry gaps that afflict any particular evaluation task that is defined as less than thorough.

First, consider the assumptions upon which the list is built: evaluation of educational programs and services must have three functions: (1) information gathering and assessment, (2) evaluation, and (3) planning.

Information Gathering and Assessment

Determining what data are needed and getting them is an essential step. Logical though this statement is, it is amazing how often an educational assessment fails to gather data before pushing ahead into passing judgments before gathering the appropriate data! Many evaluations begin from a framework of given services (institutions and programs). This approach is always destined to give a less-than-complete picture of learners and their needs. The framework or focus should be on the learners and the experiences more than on the services or program.

Evaluation

Determining what is important and weighing the *status quo* against identified values and aspirations--is the focal problem. Quantitative data are but one sort of input; even more crucial are the data about values--the inputs that provide a means for establishing the relationship between empiricism and human aspirations.

Planning is less classically a part of the evaluation process in education, but concern for improvement in education demands that evaluation be designed so as to make direction linkages between evaluation and planning. Here is the ultimately important "so what?" dimension. Here is the essential justification for the whole inquiry. Assessment that concludes with the shelving of reports has little justification in a pragmatic era.

I. Information Problems:

  A. The target population as learners
    1. Who are they?
    2. Where are They?
    3. Which of them are being reached by educational services?
    4. Which of them have needs that are not being met?
    5. What are their needs?
  B. The service programs
    1. What are the species of service programs actually or potentially available for this target population?
    2. What agencies currently have responsibility for each of the services?
    3. What articulation exists among the programs and institutions?
    4. What changes (enlargements, reassignments, etc.) have taken place in the past decade, and what has been the rationale for each?
  C. The evident concept (the actualized concept) of education for the target population. (NOTE: Regardless of any official formal enunciation of a concept of education for this target population, a responsible data base must include an empirically deduced definition. The formal view and the informal views expressed through practices and policies are often highly divergent.)
    1. What, in practice, constitutes being a member of the target population?
    2. What do they need? (How do they see their needs?)
    3. What can be done for them? (What do they want done?)
    4. What do we think we are able to do for them?
    5. How do we know when they are ready to progress from one service to another?
    6. What constitutes being an educated person?

II. Value Problems:

A. Interpretation of the needs of the target population

1. What meaning is derived from the descriptive data in I.A. above?

2. What is the political meaning drawn from I.B. in relation to I.A., above?

3. Whose opinions affect and constitute II.A.1 and II.A.2 immediately above?

4. To what extent can a more clear picture of the *status quo* be derived?

B. The aspiration and commitment of the establishment

1. What is the model of educational services to which the several voluntary and private agencies are willing to be committed?

2. What is the commitment of the public agencies? To what model of services?

3. What are the differences between evident accomplishment (as assessed by all of the above) and the commitments?

III. Planning Problems:

A. Deriving meaning from assessment

1. Whose responsibility is it to enunciate evaluative meaning?

2. What changes are suggested by the evaluation?

3. What model for future attainment can be drawn?

4. What agencies and units will be charged with implementing change toward the new model?

B. Motivating change

1. What agencies are authorized to motivate change?

2. What communication processes can be used to stimulate the relevant segments of the public?

3. What reward systems can be identified or defined for the new model?

Evaluating Pilot Projects

One way to start the evaluative process is to establish a pilot program and submit it to careful evaluation. Experiences in cross-cultural instructional materials development suggest two sources of essential data if one is to increase learning effectiveness: the *continuing study of the target learners* in terms of their social and psychological characteristics; and *measurements of learning* from the materials and resultant experiences. With reference to the first of these, there is no substitute for continuous transactions with the target learners and for the anthropologists'sort of insights into what lies behind the overt behaviors and the façade presented to the outsider. With reference to the second measurements and assessments are valuable to the extent that their meanings are reduced to workable and increasingly precise guidelines for the subsequent productions of materials. In other words, if experience is expected to teach anything, it should provide a basis for doing a better job in the program than has been done in the pilot project. Evaluation should focus on the matter of *what sorts of instructional experiences achieve what learning gains*, for *what sorts of people*, under *what sorts of instructional conditions*. The need to learn these answers is so great that it is worth the risk of disrupting the program to some extent in order to get the data! These questions must be answered; otherwise, the pilot project will be only a costly investment in a handful of people.

Evaluation in non-formal education should attend to the basic problem of non-formal education: helping the hopeless to find hope and somehow to reconstruct social systems in which such embryonic hope will not be dashed against the rocks of economic oppression. Until we are able to see whether or not a given educational program will do more than increase the size of the oppressor-manipulator class and whether or not it can be effective among people of unrealized humanity. a pilot project has not done all that it should. These questions are perhaps more philosophical than scientific but evaluation is concerned with *values*. What will people do with their new learning? Better themselves at the expense of others? This question, left unasked, has much to do with the decadence of Western education.

Chains of Changes

Some non-formal education is concerned with highly specific learning gains which can be measured in fairly precise terms in reasonably short range; for example, job skills training, nutrition and health habits are usually appropriate for statement as behavioral objectives to be achieved directly by an instructional experience. Other non-formal education operations are concerned with longer-term "chains of changes" and with more abstract learning goals. This is especially true of community development education and the concommitant concerns for "conscientization" and enhancing of self-esteem. In such projects it is not defensible to specify ultimate objectives such as "the learner is to participate voluntarily in activities that result in community change" and expect learning (behavior change) resulting from some short-term experience in a non-formal education activity.

Chains of learning steps (changes) must be identified and evaluated, step by step. An example, in a non-formal education project in community development, these chains have been specified (Figures 6 and 7). The charts following should be read from left to right, in the sense that the first box is to lead to the second box, which is to lead to the third, etc. Two points are made on this proposition:

1. It is unreasonable to conceptualize the learning process for complex social functions without taking account of the intermediate functions (behaviors) between the seminar or initiating experience and the ultimate outcome.

2. A given experience may move a person toward a desired learning outcome without, in fact, producing the intended outcome. Such a move is "good" in the short view, but inadequate as a basis for judgment in the long view.

Thus the issue is focused: should the evaluation of learning effectiveness be limited to Y1 or should the whole scope (X) be examined? Since X cannot be examined in a one-shot evaluation, evaluation of X requires a series of inquiries, usually spaced over time to determine the consequences in terms of Y1, Y2, Y3, etc. Is there time and interest in doing this thoroughly, or will it be enough

BEST COPY AVAILABLE

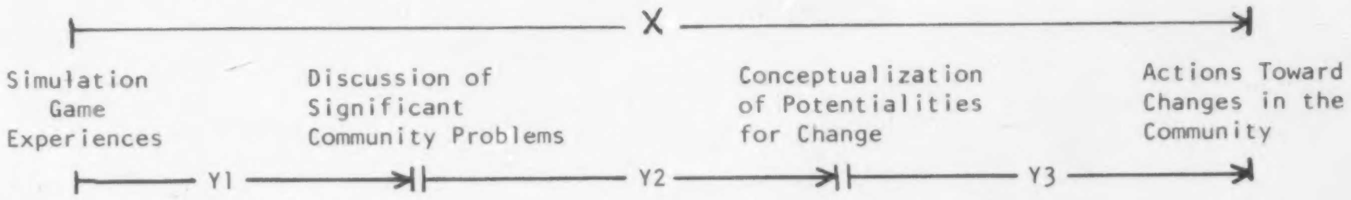

X
Simulation Game Experiences
Discussion of Significant Community Problems
Conceptualization of Potentialities for Change
Actions Toward Changes in the Community
Y1
Y2
Y3

Figure 7.--Chain of Learning Outcomes for Community Development.

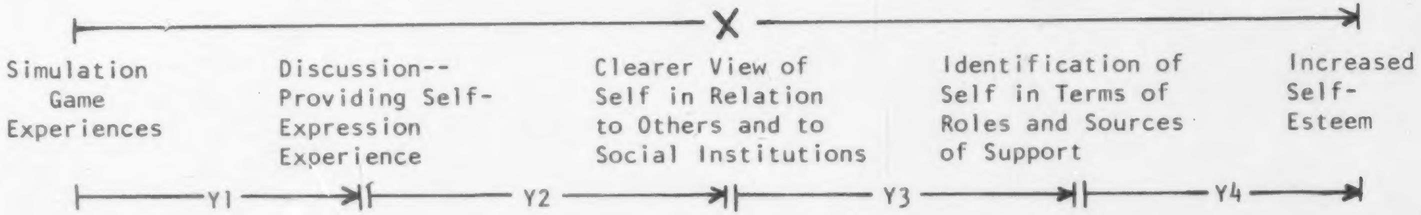

X
Simulation Game Experiences
Discussion--Providing Self-Expression Experience
Clearer View of Self in Relation to Others and to Social Institutions
Identification of Self in Terms of Roles and Sources of Support
Increased Self-Esteem
Y1
Y2
Y3
Y4

Figure 8.--Chain of Learning Outcomes for Growth in Self-Esteem.

to examine the effects of several key materials in terms of their Y1 effects and perhaps add an examination Y2 effects for certain crucial materials or experiences. Evaluations of each Y outcome should be conducted in such a way as to examine the relevance of these first and second-level outcomes to the ultimate objectives for the chain of behaviors.

The Context of Experience

For purists, the evaluation of an instructional material or experience cannot be seen as valid if it is not considered in the actual context and conditions for which it is intended. There is, for example, no way to infer that a Bolivian peasant will enjoy crossword puzzles simply because many middle-class Americans do. Or, in a less absurd illustration, claims about the learning effectiveness of a particular procedure for certain peasants in the mountains cannot be generalized to peasants on the coast without re-verification.

On the other hand one can argue that this is an issue of degree. Since no two learners are exactly alike there can never be totally generalizable claims. The issue is how much important difference is there between two sets of target learners? But then we rarely can be sure what is and what isn't an important difference! So, to play safe, good evaluation procedure calls for doing experimental work and deriving evaluative data from learners as near as possible like the target learners and in uses as near as possible like the intended uses (including facilitator/teacher style).

It is recommended that evaluation be done in the actual sites of the demonstration and dissemination projects whenever possible. And attention should be given to the other factors, environmental and instructional, that surround the uses of the materials.

A Warning About Specific Objectives

In reference to specificity of objectives, non-formal education activities fall into two categories: those with highly specific objectives represented by relatively short-term changes of a visible sort, and those that are aimed toward more complex long-term remote and less visible goals. The first of these kinds of educational activity are relatively easy to evaluate. The second kind is usually extremely difficult--and sometimes impossible to evaluate precisely.

Evaluators tend to evaluate what is easiest to evaluate. In fact, the quest for "scientific" evaluation tends to glorify those aspects of a program that are most easily measured, whether or not they are really the important factors in the program.

Problems in Gathering Data

Since many non-formal education programs are concerned with peasant populations, gathering data for an evaluation can be especially difficult. The difficulties arise from three sets of problems:

1. Contamination. The most sensitive issue is maintaining the integrity of an on-going operation while attempting to collect evaluative data. If observers or interviewers are sent in, the relationships among the learners and the facilitator or teacher may be affected. In some cases, such an intrusion is made more serious by the cultural gap between the observer and the program participants or by well-meaning efforts of the observer to become a "participant" or to usurp the roles of the leader.

2. Conceptual Level. If the purpose of evaluation is understood at all by the learners, it may be in simplistic terms. The data collectors may be seen as inspectors or as the embodiment of the whole authority structure that maintains the program. Thus those who think well of the program may behave unnaturally so as to create a "good impression." Or conversely, fear of the outsider may cause a complete breakdown of the program.

3. Logistics. Since many programs are operated in remote and scattered locations, there is a tendency to focus the evaluative efforts in the more convenient locations.

Observers as a Possible Disruption

Virtually any good evaluation plan will include the use of observers or interviewers. Since the observer is potentially a disruptive influence in what may be a fragile or sensitive situation, field workers in non-formal education tend to resent the intrusions. Further, since outsiders constitute a diversion, a threat, or, in some cases, attention from them becomes a spurious reward, the situation can be influenced and, scientifically, contaminated.

On the other hand, there seems to be a "straw man": that an outsider, a properly trained person from a compatible cultural background is a significant disruptive factor. With training and sensitivity to the more-or-less fragile dynamics of the learning situations same-culture observers can be indispensible sources of valuable data and yet minimally disruptive.

Since there is nothing much more important for the development of a program than being sure of what has been learned so far, it seems worth the risk to use trained observers and interviewers in the field wherever a sound research design dictates.

Programmatic Judgments and Technical Judgments

As indicated in reference to the concept of evaluation itself, judgment is a basic part of the process. Describing is not evaluation, measuring is not evaluation; comparing begins to be evaluation, because it implies setting one thing against another in order to make a judgment.

In so many cases, especially those in which the evaluation plan has not been carefully designed in advance, the descriptive-level data-gathering must involve judgment. Indeed, if the data-gathering procedure uses questions that demand judgments on the part of the respondent or the observer-interviewer, or asks for descriptions of past judgments, it is dealing with judgment. But these are technical judgments not programmatic judgments.

The judgment stage in programmatic evaluation is a process of comparing information gathered from the field against a standard that is based on a value position *about the program*. Thus we draw a contrast between *technical* judgments (decisions and judgments that reflect the beliefs and values of the technician) and programmatic judgments (decisions and judgments that are made about the descriptions or measurements on the basis of comparison with standards or value-based criteria about the program). The former are important data or sources of data for the description and measurement stages, but these technical judgments alone do not constitute evaluation--at least certainly not programmatic evaluation.

Reducing Rival Hypotheses

Many evaluation plans have weaknesses that arise from "rival hypotheses." A rival hypothesis is some other reasonable way to explain the data (an observation or measurement). Some of the more common rival hypotheses and the "rule-out" procedure for each are indicated in the list following. Attention to these weaknesses will improve the integrity of the evaluative research.

Sample Rival Hypotheses	Rule-out Procedures
1. Learners already had the learnings said to have resulted from the instruction.	Pre-post testing (testing before and after the instruction).
2. The learners who volunteered for the testing or interviews are in some way different from those who didn't.	Test everyone or a *random sample* (not volunteers!)
3. You see what you want to see.	Test--don't rely on judgments and opinions.
4. People tell you what they think you want to hear.	Don't bother to ask direct opinion questions--use unobtrusive measures instead.

The Problem of Generalizability

Technically, external validity is the degree to which the findings can be generalized to other situations. At the very least, generalizability demands that the study be based on a valid random sample.

A VALID	RANDOM	SAMPLE
Can surely be expected to be a picture of what it is said to represent	Each part has exactly equal chance to be included	Part, not all, but representative of the whole

If a sample is called a "random sample," and it is only a convenience sample, it has been misrepresented. If a generalization has been made to a whole from some part not validly representative, it is wrong.

When a non-generalizable finding is reported, the evaluator is free to suggest (hypothesize) the possibility of generalization if he feels that there are similarities between the sample and the whole on all crucial matters that pertain to the findings. Always write these sorts of "soft" findings as suggestions or hypotheses, not as a conclusion.

The Problem of Verbal Data

Analyzing verbal data demands skills and patience. One reason that multiple-choice or short-answer items are preferred for most purposes is that they are much easier to quantify; they can be readily converted into numbers. For example, if we want to know the age, sex, and quantity of the participants in a certain program we could use one of these two approaches in writing the questionnaire:

APPROACH I:

Please describe the participants in the program:

____

____

____

APPROACH II:

How many participants are in the program?______________________

How many are male?________________female?________________

What is the total for each age? under 15 male:______female:________

15-20 male:______female:________

21-30 male:______female:________

over 30 male:______female:________

The advantage of Approach I is that you might learn much more about the participants; but since it was already decided that the needed information is age, sex, it is unlikely that Approach I will provide this information. If we really don't know what we want to know, Approach I is satisfactory. But when we know what it is that we need to find out Approach II not only assures that the response will be concerned with the matters of greatest interest, but it will bring responses that are easy to categorize and easy to quantify. By pre-determining the categories of analysis--for example, the age categories--we make it easier for the respondent and we also make the analysis more manageable. Consider the confusion that would occur if we asked instead, "How old are the participants?" Response would say, "Most are young but several are much older," or. "Almost all are in their twenties." How can we interpret such responses?

Researchers sometimes talk about "fishing expeditions," meaning to draw up in a "net" many kinds of information so that they can be sorted out--hoping to find one or two important factors from among many. Fishing, as an evaluative research procedure is very expensive, especially in the more complex sorts of non-formal education.

Some Basic Terminology

Many people find that the literature on evaluation is technical, complicated and confusing. One of the problems is that even in the professional literature the vocabulary of evaluation is not standardized. As might be expected in any rapidly expanding technical or scientific field the consequences of reconceptualization find even the "experts" with somewhat varied viewpoints and even more varied ways of saying things.

We hope not to add to the variety of language used to discuss evaluation. Rather, we would like to simplify and suggest certain standardization of the language, at least as needed for planning evaluations of learning effectiveness in non-formal education.

The book most highly recommended for further study in educational evaluation is Worthen and Sanders, *Educational Evaluation: Theory and Practice,* 1973. Although the book apparently gives attention only to the problems of evaluation in formal education, two factors commend it to our attention: (1) its theoretical basis is more comprehensive and thorough than previously available in one volume; (2) its structure is eclectic and yet discriminating, providing in one compilation a whole collection of excellent contemporary papers on evaluation. A similar and even newer book of similar characteristics and worth is Payne, *Curriculum Evaluation,* 1974.

A Suggested Comprehensive Approach

Organizations and programs using new delivery systems have notably increased their concern for evaluation. Beyond this, even those organizations and programs that utilize long-standing and classical modes of educational delivery have shown a remarkable increase in evaluative activity within recent years. One reason, of course, is the increased emphasis on non-formal education; it has produced a series of questions, most especially questions about the effectiveness of the educational activities, and such questions tend to increase the organization's awareness of the need to know.

BASIC VOCABULARY OF THE EVALUATION OF LEARNING

Experience: The process of relating to, being affected by, and affecting one's surroundings.

Behavior: The observable actions, verbal responses, and demonstrated feelings of a person.

Learning: Changes in behavior resulting from experience.

Persistent Learning: Change in behavior (learning) that are long-term, in the sense that they are not soon "forgotten."

Cognition, Cognitive: Having to do with the processes of mind called "knowing," "understanding," "perceiving."

Psycho-motor: Having to do with the processes of learning in which mind and neural functions interact to produce "physical skills."

Affect, Affective: Having to do with the processes of mind called "feeling," "attitude," "appreciating," "valuing."

Pre-test: A measurement made before an educational experience.

Post-test: A measurement made after an educational experience.

Observation: Looking for evidence of a particular behavior or set of behaviors.

Measurement: Making observations in a systematic way so that evidences of behavior are counted.

Assessment: Examining records of observations or measurement in light of some criterium or prediction.

Evaluation: Weighing the outcomes from an assessment procedure against a value statement or system of values.

Instrument: Any prepared device, material or test used to standardize (make more similar) the observation or measurement of two or more subjects (learners).

Protocol: A schedule of questions used to standardize an interview procedure (hence, one example of an instrument).

Unobtrusive Observation or Measurement: A procedure designed to get evidence without the learner being aware--thus intended to increase validity of the observation.

Outcomes that were formerly hoped and assumed now must gain respectability through proof of an empirical sort. Another reason may very well be the natural consequence of instructional technology's emphasis on statement of objectives--evaluable objectives. One of the most predictable preoccupations of a consultant in design and program development is the matter of objectives that can be evaluated. In fact, the spelling out of objectives and the development of evaluation plans seem often more emphasized than the development of an effective delivery system!

Recent evaluative experiences in five nations (added to similar reports from other nations) have impressed us that hardly anyone in non-formal education needs to be persuaded of the importance of evaluation. At the same time, two serious problems have emerged that lie behind the relatively insignificant consequences of evaluation as presently practiced. First, the concept of evaluation held in many programs of non-formal education is both primitive and unpromising. Second, and closely related, the levels of skills and technical proficiency of evaluation within non-formal education tends to be limited.

The concept of evaluation as a set of summative and descriptive processes through which ultimate judgments and propagandistic statements can be rendered is common. A research-to-prove frame of mind seems to be foremost in the mandates of many evaluation teams. The evaluators themselves have usually been trained in a sociological-demographical approach to description; thus the evaluator's sophistication is adequate to cause him to reject the research-to-prove outlook but not adequate to give a meaningful or worthy alternative. During observations and conferences we found many cases of evaluation teams and project administrators being on irreconcilable wave-lengths. Until the concept of evaluation is enlarged and the training of evaluators is increased to match, evaluation will contribute relatively little to increased learning effectiveness in non-formal education.

A typical but larger-than-usual case illustrating this problem was found in an impoverished section of a large nation where a statewide program of school extension through television was being "evaluated" by a regularly employed evaluation staff of ten people. The program administrators were being provided an almost overwhelming array of demographic data--who is in the program, where they live, their socio-economic position, level of prior formal education, age, civil status, and so forth. There was nothing against which to assess the data and virtually no way to use the data. No expectation models have been built to identify the relevant characteristics and intended changes in the audience for which the instructional experiences had been built, and no way to tell if the audience was similar to or in what ways different from the original expectations. To the credit of this evaluation team, they were carrying out a testing program to determine the rate of "passing" students and the distribution of scores of the periodic and final tests. But no one used the test data except to make claims and propaganda about the rates of accomplishment. (True to a classical European value from formal education, the "hardness" of the program was accepted as a proof of its quality--and "hardness" was evidenced by high rates of failure.) No pre-testing had been conducted, so there was no way to establish that the program was accomplishing anything at all.

The ironic and yet probably encouraging reality is that evaluation is recognized as a promising and desirable component of educational program development. At the same time, however, one must fear that too much advocacy of this sort of almost useless evaluation may result in such unproductive and frustrating experiences that program administrators may decide that they have been victimized by one of technology's bad jokes.

Three Stages of an Organization's Use of Evaluation

On the basis of what we have observed in non-formal education it would seem that there may be a set of developmental stages through which an organization proceeds. The stages and some of the main characteristics of each are indicated following:

Stage I. Informal Evaluation

- a. Emphasis on personal communication
- b. Data gathering of miscellaneous sorts
- c. Lack of documental experience
- d. Criteria of effectiveness: (1) general ideologies; (2) various experiences

Stage II. Structural Description Assessment

- a. Emphasis on descriptive data
- b. Organized data gathering
- c. Focus on problems and concept of improvement
- d. Increased availability of documentation
- e. Clarified criteria of effectiveness

Stage III. Quantified Assessment

- a. Emphasis on quantitative data
- b. Assessment focused on achievement of objectives
- *c. Quantified emphasis for the entity
- *d. Formalization of the criteria of effectiveness.

Criteria and Key Questions

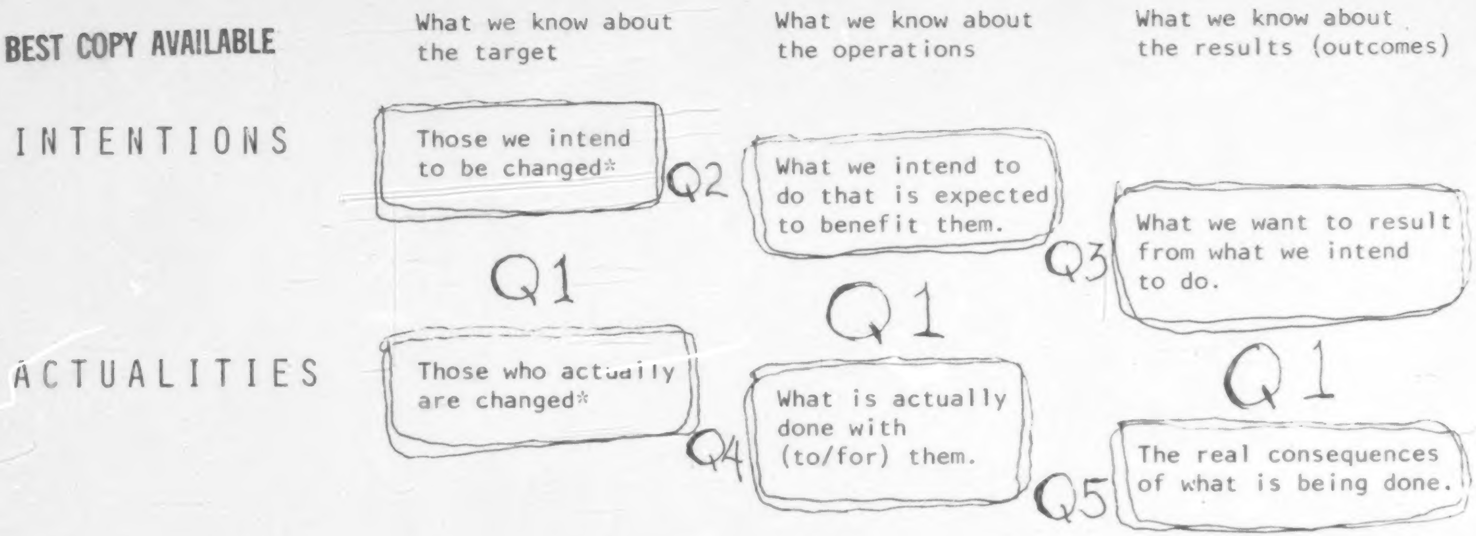
An effective system of evaluation for a program of non-formal education will have the following characteristics:

1. The major purpose is to enlighten decision-making at management and operational levels.
2. The focus (emphasis) is on specific questions that are important to the organization; these are questions or issues relating to more effectively performing the service.
3. Data-gathering is related to (and limited to) the questions under study or examination. The instruments (questionnaires, forms, interviews, etc.), are built to get information that will be used in answering the question.
4. Questions for evaluation are related to the theoretical, and procedural basis of the organization's work. The theory as well as the practical matters of operation are always subject to change, on the basis of the evaluations.
5. Descriptions, measurements, and assessments are carefully made by objective procedures. Guesses (when their use is absolutely necessary), are labelled as guesses. Opinions are labelled as opinions. Actual measurements are quantified when possible.

---

*While inherent in "efficiency," there is an inherent danger in these leading to rigidity.

BEST COPY AVAILABLE



	What we know about the target	What we know about the operations	What we know about the results (outcomes)
INTENTIONS	Those we intend to be changed*	What we intend to do that is expected to benefit them.	What we want to result from what we intend to do.
ACTUALITIES	Those who actually are changed*	What is actually done with (to/for) them.	The real consequences of what is being done.

*What are they like?
We must come to
understand them!

Q1 - Questions: How similar? What discrepancies?

Q2 - Question: Is it reasonable (logical) to do this for these sorts of people?

Q3 - Question: Is it reasonable (logical) to expect these results from these activities?

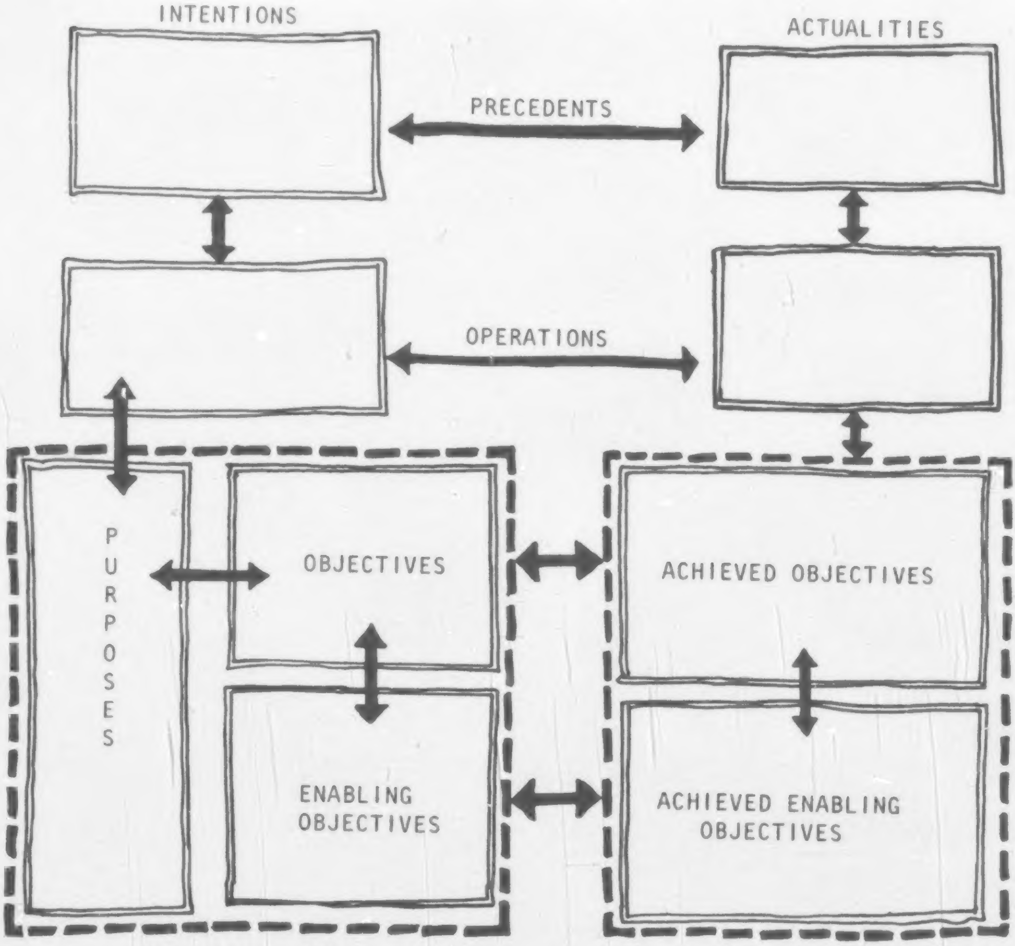
Q4 - Questions: To what extent are the activities reaching the actual target people?
After we learn more about the actual target, is there real probability
that these operations will relate to them?

Q5 - Question: Is it happening because of what is being done, or for other reasons?

00279

EXPANSION OF CONSEQUENCES (OUTCOMES) IN ROBERT STAKE'S MODEL OF DISCREPANCY ASSESSMENT

BEST COPY AVAILABLE


INTENTIONS
ACTUALITIES
PRECEDENTS
OPERATIONS
PURPOSES
OBJECTIVES
ACHIEVED OBJECTIVES
ENABLING OBJECTIVES
ACHIEVED ENABLING OBJECTIVES

1. Is each objective logically representative of the purposes?
2. Does each enabling objective have a logical (theoretical) probability of leading to the objectives?
3. Does the achieved enabling objective lead to achievement of an objective?

BEST COPY AVAILABLE

	INTENTIONS		ACTUALITY
PURPOSES:	What is the effect we want to have? (Why are we doing this?)		What do our learners accept as the purpose of the experience?
GOALS:	What do we want to happen as a result of what we will do? (Changes or states that we would like to bring about?)		What do the learners want to happen?
OBJECTIVES:	How will we know our goals are being reached? - under what circumstances? - will what behavior (acts or expressions)? - be expected, with what degree of accuracy or frequency?		What are the learners looking for as evidence that their goals are being reached?
PRE-CONDITIONS IN LEARNERS:	What sort of persons do we expect to do this for?		What sort of persons do we actually work with?
INSTRUCTIONAL OPERATIONS:	What do we intend to do in order to achieve the goals and objectives?		What we actually do toward achieving the results.
CONSEQUENCES IN LEARNERS:	What do we want as results of our efforts? (This will be the objectives-above-in evaluable terms)	← Evaluation Component →	What we actually see as results of what we have done.

Figure 8.--Questions for a Discrepancy Assessment.

BEST COPY AVAILABLE

CONSEQUENCES IN LEARNERS | WHAT DO WE WANT AS RESULTS OF OUR EFFORTS? ← EVALUATION COMPONENT → WHAT DO WE ACTUALLY SEE AS RESULTS OF WHAT WE DO?

EVALUATION COMPONENT

		What are the available sources of information?	How will we get the information?	What is our assessment standard?
What will we look for that we want to find?	1.			
	2.			
	3.			
	4.			
	5.			
	etc.	etc.	etc.	etc.
What will we look for that we don't want to find?	11.			
	12.			
	13.			
	14.			
	etc.	etc.	etc.	etc.

What changes would be made if the assessment standard were not met? (For each "look for" item.)

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. ______________________________
8. ______________________________
9. ______________________________
10. ______________________________
11. ______________________________
12. ______________________________

Figure 9.--Building an Evaluation Component.

6. Judgment is an essential part of the process, bringing together the clearest of value-statements and the most specific, valid and reliable data.

From all of these suggestions about kinds of useful data, it is easy to see how complex and sprawled a thorough evaluation might become. It is necessary to make some choice; one cannot include everything within an evaluation, no matter how nice that might be.

Deciding what is and what isn't worth the time and expense of including in an evaluative study isn't easy. One useful rule-of-thumb is to ask "What difference would it make?" If it appears that no matter what evaluative study might reveal on a certain matter nothing could or would be done about it, then the factor might well be left out of the evaluation.

Even more helpful in making these decisions about what is and isn't important in a given evaluation in the model provided by Robert Stake (1967), adapted for Figures 7 and 8 given earlier in this section.

Anxieties of the "New Pioneers"

Within many of the "new pioneers" who are at the helm in non-formal education there is a deep commitment to flexibility and non-institutionalism. Especially among those carrying on the various kinds of educational efforts toward community development, and even among those engaged in the newer concepts of literacy education, rigidity and formalism is feared. Some of these people seem to have an historical and sociological awareness of the probability of rigidity following close upon standardization and regulation. Others seem less aware of historical precedents but nonetheless they sense the difficulty and are concerned with its harmful consequences in terms of reduced learning effectiveness. In general, the outstanding and aggressive leaders in community development treat flexibility and situation-specific responses to social needs within given social contexts as if these were the new absolutes! (One is amazed at the absoluteness of relativity!)

In the face of this high valuing of flexibility and its abhorence of "prescriptions" and "recipes," theory-building is an uphill battle. The "new pioneers" are disinclined to describe how they achieve their successes lest some "old-model" educators come along to copy and, it is assumed, to misapply the procedures.

The inventiveness and creativity that underlies the work of the "new pioneers" is a powerful and refreshing force in education. One may even hope that this spirit and tone will somehow stimulate formal education. But there is an irony in the situation: the uses of new technologies of communication and newer concepts of society and human development identifies the "new pioneers" with science, objectivity, experimentalism, and basic to it all, empiricism. Yet the essence of science and scientific method is having a difficult time of it within much of non-formal education!

Taking Brazil as a case, one finds a dazzling array and variety of creative, clever, innovative and apparently promising modes and forms of non-formal education. These range from simple extension of the schooling enterprise (for example, in Maranhão where children are gathered into teacher-less classrooms to watch their schooling on state-wide broadcast television) to programs that bear no resemblance to formal education (for example, a program of literacy that is based on a one-teach-one per discipleship model). In fact, the variety and proliferation has raised eyebrows in the national capitol where responsibility for protection and effective distribution of national resources gives rise to a counter-value: selection and efficient standardization on proven models, accompanied by limited and carefully monitored experimentation. Certainly the rich variety of inventive forms of educational delivery would be a credit to a wealthy nation, but even if scarce resources were not at issue, the state of human knowledge--science--is being advanced very little by these many "promising" programs of non-formal education. In the interest of scientific knowledge and the worldwide advancement of the human condition, more precise description and responsible evaluation are needed. Theory--educational, sociological, and social-psychological--could be advanced substantially if even half of the various non-formal education activities in the world today were submitted to scientific observation, description and evaluation. Further, one suspects that the ultimate result of such a variety of programs will be the survival of those that are able to make the most convincing political noises--those that are not necessarily the most effective in terms of learning, but in terms of political propaganda and "influence."

Thus the "new pioneers" in education do themselves a disservice by resisting involvement with scientific processes of description and evaluation. There perhaps are four kinds of people or four kinds of stances that explain the resistance of those who owe so much to science and technology yet resist making their contribution to broadly defined human knowledge:

1. Those who fear the exposure that evaluation would bring: the FEARFUL;
2. Those who are so completely convinced of the worth, significance, and superiority of their own approaches that they see no need to raise questions: the BELIEVERS;
3. Those who are willing but technically unable to engage in scientific procedures, because of physical and staff limitations or lack of know-how: the NEEDY;
4. Those who are resistant to scientific description and evaluation, believing that through scientific participation their approaches would become less flexible, less open, less situation-specific: the RESISTERS.

For the FEARFUL we have little to offer.

For the BELIEVERS we have a challenge: open yourselves and your programs to dialogue about scientific propositions. Either you will learn something or you will make important contributions to human understanding, or both!

For the NEEDY we offer in this chapter a basis--though only rudimentary--for the concepts and procedures of scientific inquiry, description, and evaluation through which--if the resources can be found--they might make practical and profitable investments in clarifying and probably improving learning effectiveness in a given program of non-formal education.

For the RESISTERS, this chapter is particularly intended to reduce the anxiety about loss of flexibility. For these people we have great respect because, of all the "new pioneers," these people seem to be the most dedicated to two values that we accept as central to our concept of learning effectiveness:

1. The importance of educational programs being designed on the basis of a comprehensive view of the global social reality within which learners live and gain their rewards.
2. The importance of effective interpersonal relationships in the acquisition and prompt use of new knowledge.

We have engaged in several countries, with "resisters" in respectful dialogue about the importance of clarifying, describing and sharing what they are learning about human learning in these new configurations. And we have drawn from precedents in science and in the sociology of organizations and institutions to demonstrate how scientific description, theory building and dialogue can be used to assure long-term flexibility and a higher degree of resistance to institutional ossification.

The Nature and Role of Theory

The argument is based on the nature of theory. Theory, in science, is a concept or system of concepts that binds together the best of what is already known about the observable realities. Theory, in reference to a given educational problem, instructional task, or learning situation is that body of knowledge that provides the basis for new hypotheses. Hypotheses, tested in observable situations, provides more of the substance of theory--whether in terms of extended support for the extant theory, augmentation of that body of theory or refutation of parts of it.

It follows, therefore, that theory always exists in any educational operation--whether good theory or poor depends on the rigor of statements of what is happening and what has gone on before. In an operation where the basis for planning and operation is "hunch" or unsupportable opinion, theory is weak and the probability of adding to the understanding of human learning is relatively low. Where an operation is based on carefully defined understanding of the human variables--especially if an appropriate body of social science theory exists in reference to the particular case, then the probability of adding to knowledge of the processes and function of teaching and learning is considerably higher.

But there is another factor: any educational operation which is seeking new solutions or pursuing goals not well understood in previous experiences is particularly subject to premature conclusions based more on spontaneous coincidences than on scientific evidence. We have observed in non-formal education, especially within content areas in which formal education has been relatively unsuccessful, a tendency to "invent truth." It is important to remember that most of the inadequacy of formal education is attributable to its non-scientific characteristics rather than to any misdirection through science. If any social enterprise lacks a basis in scientific theory, it is particularly vulnerable to being locked into a doctrinaire or ideological embrace; the supporters of a particular viewpoint or a particular contention about how the job is to be done can dominate relatively easily. Earlier we described these sorts of people as "BELIEVERS." They are not much concerned about evidence, they are even less concerned about inquiry; their position is based on what they want to believe. As we view the maze and variety of forms and programs of non-formal education, the probability that all approaches to a given target problem could be equally valid seems low. Surely, some means of determining which approaches are more effective--better yet, more cost-effective--must be enlisted unless the whole field of non-formal education is to waste itself away through bad investments. There are three roads to choose among: (1) support for any and every clever idea about how to conduct non-formal education for given purposes--this is the expensive road; (2) competition among various programs on the basis of noise-making and political fanaticism--this is the *wasteful* road; or (3) conducting or orderly data-gathering to determine the effective and ineffective aspects of each program, making decisions about continuation and alternation on the basis of cost-effectiveness--this is the *scientific* road.

Documentation and Analysis: A Vaccination Against Rigidity

Those who contend that flexibility and creative response are vital in effective non-formal education are apt to be disturbed by the insistence here upon descriptive and evaluative research. We have even encountered those who argue that descriptive documentation of the way a given operation is conducted will, in itself, bring on the "disease" of rigidity. They argue that writing tends to freeze ideas into permanency and that bureaucrats who get their hands on documents about "the way we do things" are apt to use the documents for many years as the basis of judgment about the way we *ought* to do things. Although there is, unfortunately, some experience to back up their contention, we persist in the argument that an undescribed, undocumented operation is more vulnerable to fall under the dictation of the BELIEVER and thus is apt to become rigid for his reasons. On the other hand, if one really values creativity and sees that continuing to learn from experience is basic to steady human progress, an open system--subject to orderly change--should be preferred. That is exactly what we are talking about here; descriptive and evaluation research is basic to an open system wherein orderly change can occur.

To use an analogy, if rigidity in an instructional delivery process is the "disease," then documentation of the practices of the process is the vaccination. The analogy suggests that the mild and controlled exposure to the infectious substance induces antibodies that prevent subsequent calamity. Thus we grant that documenting a system suggests exposure to a mild form of rigidity, but the long-term effects make it quite a wise risk.

Evaluation or Experimentation?

The logic of the paragraphs above, if extended in full, would argue for experimental research as a key element in the development of non-formal education. We are not prepared to go that far.

Perhaps because we have seen so little substantial improvement in formal education come about through experimentation, or because of our difficult experiences in conducting experiments *in vivo* within complex social settings, we place no great hope in experimental studies conducted on a large scale. As we demonstrate in another chapter, experimentation on key issues can be important, but unless the experiential variables are extremely small and the experiential situation rigorously controlled, contamination of real studies is almost inevitable. Further, after the variables are reduced and the situation controlled, what is left quite often bears little or no relationship to the "life situations" to which the findings are to be generalized.

Descriptive and evaluative studies are all that we can urge in good faith. Indeed, they may be all that is really needed, given the multifarious and *ad hoc* nature of most non-formal education. What is needed most just now is reliable information about how given programs carry out their work and what effects they are producing. To an experimentalist this may demand cause-and-effect proofs, but to the pragmatic maker of decisions in non-formal education it is more a question of "exactly what are they doing, what evidence suggests that they are getting the job done, and what are they learning about how to do it better?" This frame of mind obviously is vulnerable to all sorts of unsupportable assertions, but it is the predominant constructive posture we find in non-formal education. The best thing that we can do, then, is to help people do competent descriptive studies and responsible evaluative research. There is wide-spread interest in the findings of such studies, and the implications will be used; we cannot say as much for experimental studies.

The Ultimate Problem: Learning Effectiveness

Learning effectiveness is an elusive goal. Within the aspirations of any dedicated teacher, the intention to enable learners to learn effectively is a persistent goal. This aspiration is fulfilled through a series of approximations. Always the goal is just beyond the accomplishment. Learning effectiveness is rarely, if ever, achieved in the absolute or ultimate degree. It is a sort of vision--an ideal to be diligently sought after. "Learning effectiveness" or "effective learning" suggests both an achieveable goal and a continuously projected ideal. A given learning experience can be seen as "effective" for a learner, and at the same time, the teacher's ideal is being extended toward an even more effective, more consequential, more potent learning for the next learner or for the next experience. The search for more effectiveness in the learning process should never cease.

Critics of formal education suggest that many or most schools have lost their concern for learning effectiveness. In the institutional sense of having tended to "freeze" into ritual and unchallenged habit a set of goals and procedures, the accusation seems reasonable; but to suggest, categorically, that all teachers and all institutions of formal education have abandoned their concern for learning effectiveness seems unnecessary and unfair. The search for more effective learning is not unique to non-formal education.

Non-formal education is particularly concerned with the problem of learning effectiveness because non-formal education has no other justification. Except for those sorts of non-formal education that are, in fact, disguised alternative forms of formal education, non-formal education has no system of artificial rewards, self-justifying certificates, or self-denied levels of accomplishment. Within the mainstream of non-formal education the reality of its effectiveness is in application and use of learnings. For example, formal education typically accepts performance on a test or "covering" a certain body of learning exercises as signifying accomplishment; thus effectiveness is measured in reference to abstract and remote criteria. Within non-formal education, the intention is to make life-changing educational inputs to the learner, and then the frame of reference is application and life-style realities. Evaluation of effectiveness is based on a value system of up-graded human and social conditions. Thus within non-formal education learning effectiveness is a matter of particular urgency and functionality. For non-formal education learning effectiveness is not an option, it is a mandate.

The quest for more effective learning demands a capability of learning from experience. If there is no way to improve on past practices there is low probability of increasing learning effectiveness. For many, especially the newcomers to educational design and planning, there is a sort of "beginner's dream" of some great leap forward into a new era wherein learning will be more effective and less costly. Older heads are more inclined to expect the gains in smaller steps. Among educators there is an old adage that whereas one teacher has had twelve years of experience another had had one year of experience twelve times! The reference here is to the difference between gaining skills and understanding through experience, versus merely repeating the pattern of activities of the past. Within non-formal education even if one assumes potentially large leaps ahead through new delivery systems, the educators (planners, designers, and teachers) who know how to learn from experience will be engaged in the continuing search for closer approximations of learning effectiveness.

Technologists of education have contributed new instructional hardware and gadgets; and to some extent these are valuable, especially since they open up new forms of educational delivery. But the technologists have contributed something more important: the concepts and procedures of formative evaluation. For those who are new to the term "formative," a word of encouragement is offered: formative evaluation is simply an extension of the venerable proposition that one can learn from experience. Formative evaluation is a term that indicates the use of evaluative procedures as a set of tools to stimulate and direct change. For those who see educational delivery in terms of "systems," the idea of formative evaluation is seen as a focus on the cybernetics of that system--the mechanisms of autonomous and intra-system regulation that increase its probability of goal achievement. So much for the big words.

In the past, most educational evaluation was focused on the learner, as if knowing his extent of accomplishment were the most important piece of information needed by the educator. There followed historically, a period when evaluation--especially testing (descriptive measurement)--was focused on "diagnostic" or pre-learning conditions and characteristics in the learner. During this period education became more aware of "individual differences" that every learner arrives at the learning experience with his own previous learnings, his own aptitudes, his own motivation and his own "readiness." Thus began that emphasis on accommodating individual differences that has led--in overly rich western-style education--to the idealization of "individualized learning."*

The third and most recent stage in the evolution of educational evaluation is represented by the distinction being made between formative and summative evaluation. The significance of this distinction and the importance of the resulting new viewpoint lie in the proposition that evaluation can be a tool for the improvement of the instructional system or learning system itself. In contrast with earlier concepts of evaluation in which the success or failure of the learner was the focus of evaluation, the new concept of evaluation focuses on the learning system and its successes and failures. Oversimplified, the earlier views of evaluation indicated which learners had to work harder; which ones were "making the grade" and which were "unsatisfactory." The new view asks about the learning system in terms of how it is satisfactory or unsatisfactory and what needs to be done to change it. For those who believe it is more humane to remodel systems to better fit the needs of people rather than to squeeze people into the molds of systems, this new emphasis within evaluation concepts and procedures has a strong appeal.

And, of great importance to non-formal education, the new emphasis within evaluation offers ways and means to preserve flexibility and responsive capability within educational systems. Thus we see evaluation, especially formative evaluation, as having an important role in the continuing striving for learning effectivensss and in the important matter of defending non-formal education against the natural tendencies toward standardization, tradition, institutionalization and the natural end of these tendencies: ossification.

---

*The assumption that optimal learning effectiveness is dependent on "learning at one's own rate," "learning on one's own," "learning on the basis of one's own previous learnings" is widely accepted within formal education. This view, largely unchallenged, has given impetus to instructional procedures that isolate learners from one another and emphasize out-of-context cognitive learnings at the expense of stunted affective development and similar non-social excesses.

Postscript: The Moral Dilemma of the Evaluator

Technologists of instructional systems tend to see themselves as specialists. For example, the instructional design specialist tends to avoid the issues of curriculum planning. His approach is apt to be of this sort: "You tell me what you want the students to learn and tell me a little about what they are like and I'll work out some materials and plan some experiences that will assure that they will learn what you want them to." Some specialists in evaluation try to exempt themselves from anything but the ways and means of collecting and analyzing data; they show strong aversion to taking on any responsibilities until someone else has spelled out the learning objectives in great detail. Their only role up to that point seems to be "needling" the operators of the program until some statements of objectives are written.

It is this "needling" or pushing, that can warp or prevent certain sensitive aspects of non-formal educational programs. The common mystique among the absolute empiricists in education argues that something isn't real if it can't be measured. As an abstract argument this holds up rather well: anything that is actually happening is describable; anything that can be described can be quantified in some way. The poet might cringe at the thought of quantifying the characteristics of a rainbow, but it can be done. But are the quantifiable aspects of a rainbow the same thing as the rainbow? This is the dilemma! When operators of an educational program--especially a pioneering venture or a fragile new solution to a persistent problem (as non-formal education usually tends to be)--are pushed too hard and forced to specify their purposes in quantifiable terms, the essence of the program may be left by the wayside in the scramble to find those aspects that can be quantified.

Evaluations based on measurements are surely more apt to be objective than those based on verbal descriptions alone. But an evaluation that is based on quantifications of the peripheral factors in a program may be worse than useless.

Thus evaluation specialists, if they are to be at all helpful in non-formal education must make three concessions:

1. Evaluators must listen to program developers and operators in order to come to an understanding of the essence of the program. Putting it another way, evaluators should not put program people on the defensive about the specificity and quantifiability of objectives.

2. Evaluators must accept the possibility that some worthy goals are not fully reducible to quantitative objectives at a given point in time. The creative educator should not be forced to conform to the limitations of science and technology. These, instead, should be harnessed to serve the purposes of the educator. There is, of course, a dilemma here: we generally argue that non-formal education is more able to spell out its objectives than is formal education, yet we argue for patience; this is because we see certain programs of non-formal education (especially those that deal with conscientization of peasants) coming to grips with some of the seriously neglected aspects of the western world's concepts of education and the needs of many. It is especially for these programs that we plead for restraint in the application of forceful technology.

3. Evaluators must be content with the evaluation of interim objectives as representative of interim goals in reference to programs that are only partially developed or partially implemented. The reference here, of course, is to the many cases where a piece of a complex program of non-formal education must be put into action (and perhaps become self-sustaining) before other facets of the program are made operational. In such a case evidences of accomplishment of the ultimate behavioral objectives may be impossible until some later date. A helpful evaluator will not prematurely force the issue about evaluating the ultimate goals and objectives of the program.

The road to wisdom?--
Well it's plain and simple to express:

Err
and err
and err again
but less
and less
and less.

(Piet Hein: Grooks, 1966)

Special appreciation is expressed for the partnership of the Federaçaõ de Órgãos para Assistência Social e Educacional (FASE, Rio de Janeiro, with Regional Offices in Belem, Recife and Porto Alegre. The leaders and staff of FASE have built an organization through which community development education activities are stimulated and supported. This chapter is deeply indebted to their experiences and is based on th authors' participations with them. Through these experiences the relationships of formative evaluation to complex forms of non-formal education have become somewhat more clear.

CHAPTER V

EVALUATING, CHANGING AND INCREASING LEARNING EFFECTIVENESS

William A. Herzog, Jr.
and
Raul Gamio Santoyo

The worker in non-formal education frequently faces the question: "How am I doing?" This breaks down into a series of issues that go to the heart of his program objectives: How effective is the program? How good are the materials? What learning is taking place as a consequence of participation in the program? In what ways do people do things differently as a result of having "gone through" the program?

The purpose of this chapter is to show that evaluative research can be utilized as a tool for providing systematic improvement in learning effectiveness. Specifically, we will briefly mention some of the issues related to evaluative research, describe a rural non-formal education program which contained an evaluative research component in its organizational structure, and discuss some of the implications of that experience.

Evaluative Research

Evaluative research presents some distinct differences from theoretical research. It is oriented toward problem identification and problem-solving. It operates within administrative and operational constraints imposed by the nature of the program of which it is a part. And it must collect and analyze data and then report back findings with relative speed if its results are to have value for the program.

This is not to say that theoretical research and evaluation research are incompatible; indeed, as we point out later, they are sometimes complementary. Theoretical questions have been examined within the conduct of evaluation research, but examples of the harmonious marriage of the two are not easy to find.

Evaluative research can be most effective when it is used to measure clearly stated program objectives. Ideally, such objectives will be framed in behavioral terms. When the researcher is asked to evaluate the effectiveness of a given program his response must be: "Tell me the specific behavioral changes your program is aimed at producing and I can go measure and see if you are achieving those objectives." Broadly defined global program goals will produce ambiguous evaluation research results.

Two roles for evaluative research have been identified--formative and summative.[1] Formative evaluation deals with materials and programs at the developmental stage. It provides feedback for modification and improvement before materials or programs are considered in final form. Summative evaluation measures the final, finished produce--materials or programs--and attempts to determine whether the produce has reached its objectives and whether its results merit repetition in another situation. It may not always be clear whether a particular evaluation is formative or summative, depending on the status of the activity in progress. But whether it be formative or summative, it is obvious that one of the main functions of evaluative research is to make decision-making processes more effective. Evaluative research may lead to a decision to revise materials before a program gets underway, or it may help decide whether a given "pilot project" merits expansion to a larger regional or national effort.

PCP Mexico--A Case Study in the Use of Evaluative Research

The use of evaluative research as a feedback for program development will be illustrated by a program of rural training in Mexico, known as Programa Campesino de Productividad (PCP), roughly translated as Peasant Productivity Program. PCP came into being in 1969 as an outgrowth of a parent institution, the National Center of Productivity. PCP was charged with the training of the rural Mexican man and woman through development of special programs, use of the mass media, and providing specialized methods for change agents working in the rural sector. Specifically, this was to be accomplished by:

1. Increasing the efficiency of the agricultural production units by enlarging the organizational and administrative capacity of the farmer, principally those who have been beneficiaries of Agrarian Reform--the small landowner and "ejidatario."[2]
2. Diffusion of information through more modern techniques to increase efficient use of production units.
3. Establishing a service which would be capable of: (a) developing training programs for personnel, specialized in social communication and rural administration; and (b) producing and evaluating prototype materials for the peasant clientele.

Organization and Activities of PCP

PCP activities are carried out by three departments. The first of the departments is training, with responsibility for the development of course materials and the conduct of training programs in the field; the second department is charged with the preparation of radio and TV programs, films, audiovisual aids, and the design and illustration of printed materials. The Research Department collects data on target audiences prior to the preparation of training materials and evaluation of effectiveness of materials, courses, and other PCP activities.

The specific programs of each department include the following kinds of activities:

1. Training Department.--The activities of the Training Department come under three main headings: Rural Administration, Peasant Leadership, and Home Administration.

The Rural Administration program is aimed at providing the peasant with sufficient technical knowledge and information so as to allow him to make better decisions in the allocation of his own resources, with the aim of increased productivity. Among the training programs which have been developed and administered are courses in irrigation, fertilizers, insecticides, agricultural credit, and other commercial aspects of the farm enterprise.

The Peasant Leadership modules are aimed at preparing farm leaders to make more efficient application of community resources. PCP began by defining its clientele as those leaders chosen by the community for some administrative task--municipal or ejidal. The courses for peasant leaders, to date, consist of five themes: principles of agrarian legislation, institutional services for agrarian activities, principles of social organization, administration of community resources, and civic activity.

The Family Education program has as its purpose the "increase of woman's capacity within the rural context so that she might have a more active and effective role in the affairs of administration, organization and economics of the family." In order to make the farm wife an effective agent for socio-economic change within the community, courses deal with home administration, family relations, and consumer education.

Training Department personnel are responsible in each of the three major areas for the development of these training programs, conduct of pilot programs and subsequent revision, and training change agents from other institutions in the use of PCP materials. The latter activity fulfills a major PCP goal of creating a multiplier effect by making its materials available to other organizations.

2. Production Department.--The Production Department is responsible for the design and production of didactic materials for the activities of the Training Department. While these consist mainly of printed material and audio-visual aids, the department also makes short feature-length films on topics related to the courses and

to rural problems. Radio and TV programs are also produced. The latter have been utliized in the TV forum format, where groups of farmers meet weekly to view the half-hour TV program and remain to discuss the applicability of concepts to their own particular situation. The radio and TV programs provide reinforcement by presenting concepts which have been previously covered in training programs which many of the farmers would have attended.

3. Research Department.--The Research Department was created to provide a data-based orientation to PCP activities and to evaluate the various activities and materials of the Training and Production departments. The department is charged with:

- performing descriptive studies in the geographic areas of PCP pilot programs which will provide an empirical description of the target audience.
- evaluating the application of the training programs: objectives, contents, methods and techniques, materials and the use of mass media.
- assessing the amount of change occurring in the areas where PCP is working that might be legitimately attributed to effects of the training programs.

PCP has carried out field programs in two project areas: one in the state of Mexico and the other in the state of Guanajato. These activities have been of a pilot nature and therefore geographically limited in scope.

In each area, the first research task was to produce descriptive studies of the areas and the specific communities in the project area. The preliminary research included interviews of a sample of farmers to determine their perceptions of needs and interests and those of their families.

A second step was to gain the cooperation of key agricultural institutions in each area to collaborate with the project. In the state of Mexico, collaboration was secured with the National School of Agriculture; in Guanajato with the Secretary of Hydraulic Resources (irrigation service) and the Central Agricultural Bank.

Following an identification of the needs of the farmers and the institutions that could be of service to them, training programs were designed. Particularly in the course concerned with rural administration an effort was made to make farmers aware of institutional services which were available to them. Necessary materials were prepared including teaching aids, slides, posters, and handouts for participants.

The training sessions for the farmers were held in the communities themselves, usually in a rural school building. Groups of farmers, enrolled in the courses, typically ranged from 10 to 50 participants in each community.

Utilization of Evaluative Research

Several kinds of evaluative research projects were carried out. Each resulted in particular decision-making effects.

1. Baseline Community Studies.--The philosophy of PCP program development assumes a data-based knowledge of the target audience (or client system) on which to prepare training programs and materials. This data is to be provided through descriptive studies carried out by the Research Department.

The early exploratory studies, carried out in the states of Mexico and Guanajato, produced descriptive data on the use of irrigation systems, knowledge and utilization of institutional services that operated in the area, availability of credit programs, commercialization of farm products, and innovativeness in adoption of agricultural techniques. In addition, data on the usual demographic and socio-economic characteristics were gathered. But because of the urgency of getting the training programs into operation, most of the materials were prepared and put into use before the research results were available. In part, this occurred because the ambitious scope of the research produced more data than could be rapidly analyzed, but also because of the institution's lack of familiarity with the research process.

After the experimental program had been underway in La Begona (state of Guanajato) for two years, a data bank for each of the 13 communities that constituted the main field work was created, providing a socio-economic profile for each community. Thus the various kinds of courses, materials, and other communication could be better evaluated with reference to the target population.

Another kind of assessment of the needs of the target audience is exemplified in an exploratory study conducted to determine knowledge and attitudes toward family planning in the Guanajato project area. In the course of some of the Family Education training programs, women had expressed interest in knowing more about methods for "limiting the number of children." The Research Department was asked to design a study which would give some indication of knowledge of and attitudes toward methods for controlling family size. Interviews were conducted with 30 women who participated in training programs in two rural communities. Another 17 interviews were conducted with women and their husbands, so that data on 47 households were collected. Results indicated that parents prefer smaller families but have little knowledge of orthodox anti-conception measures, except for the pill. Most couples had given little thought to family size before marriage. The parents of larger families were more inclined to accept family planning information. The research report concluded that a program of family planning and education would probably be well received in that area. It suggested that such a program should give special attention to reaching men, whose attitudes toward family planning are generally less favorable than women's. The report recommended that PCP contact the Office of Health Assistance (OHA), which has a division responsible for family planning information and is the appropriate institution to conduct such a program in rural communities.

In addition to the OHA, the report was sent to other institutions and government agencies for whom the findings would be relevant, including the National Institute for the Protection of Infants and the Mexican Foundation for Population Studies. To date there is no indication that the OHA took any action on the report. It is difficult for an institution such as PCP to stimulate institutional action that falls outside of its own purview.

2. Evaluation of Training Programs.--A second kind of research deals with the short-term effects of the training program. Typically, participants are measured on attitudinal and knowledge items at the beginning of the course and again at the end, and the amount of attitude change and knowledge gain as a consequence of course participation can be calculated. As a consequence of the research findings, recommendations can be made regarding modifications of course conduct and materials.

An example of this kind of research is provided in a longitudinal evaluation conducted on a training program dealing with the economics of credit, conducted in the La Begona, Guanajato, area of the project. Thirty-six interviews were conducted the day before the pilot course began and 39 on the last day of the course, of which 24 people appeared in both the "pre" and "post" samples. The majority of participants was over 25 years of age. The most striking research outcome was the finding that although 90% of the participants claimed to be members of the local credit society, there was a general lack of knowledge about what it meant to belong to a credit society and about how such societies functioned. Furthermore, it was found that the training program itself produced only relatively small knowledge gains related to credit societies. It was concluded that most farmers have only a nominal membership in the credit society with little understanding of or commitment to the work and goals of the society. The research report recommended that training courses not be given unless they be conducted in closer colaboration with credit-related agencies.

Partially as a result of these findings, PCP developed a joint project with one of the two official banks in the area, the Central Agricultural Bank, S.A. (BACSA), for a cooperative training program. BACSA assigned two bank agronomists to work with two PCP technicians as a training team to conduct courses on use of credit in the communities. Supervision of the training activities remained the responsibility of PCP's training department. In the evaluation of a course conducted jointly by the BACSA-PCP team, a statistically significant increase was found in knowledge levels about availability and use of credit. Several explanations were offered:

a. The direct participation of the agency that actually dispersed credit (BACAA) gave the course more credibility, and made the material more salient to participants.

b. The general organization and conduct of the second course appeared to be better than the first. More accurate records were maintained. Only those participants who attended at least three of the five sessions were included in the evaluative data.

c. The original pilot course represented the first time that the PCP instructor had taught that specific content material. He probably gained experience through the first course and was more effective in the second.

3. Evaluation of Training Materials.--In addition to evaluating the training programs, it is also necessary to evaluate the materials used. One approach is through formative evaluation where individual components of films, TV shows, or workbooks are pre-tested during the development of the material for such factors as interest, intelligibility, and learning. Thus before the material is ever presented to its intended audience, it has been evaluated and the producer can have greater confidence in its appropriateness.

There have been some PCP research efforts that are at least somewhat formative in approach. For example, one study was designed to evaluate the use of illustrations for training materials in a course on corn production costs. Twenty-eight line figure drawings, illustrating concepts and activities to be presented in the course, were shown to a sample of 41 farmers in four communities of the Guanajato project area. The farmers were asked to identify the elements in the pictures and to describe the actions being presented. Although most of the identifications were correct, the research report recommended that eight of the drawings be eliminated and six more be revised.

In the area of films, TV and radio programs, PCP was less successful in developing a *modus operandi*, whereby formative evaluation would be an integral part in the production of a specific film or a radio or TV program. Several films, the TV series and the radio programs were evaluated for their effect on the intended audience after the materials had been completed, but little was done in terms of evaluating and modifying program components during the productive stages.

Discussion and Conclusions

A number of conclusions or generalizations about evaluative research emerge from the examples we have presented from the PCP experience.[3]

We note a number of potential problems which evaluative research faces in an action agency of non-formal education, not all of which are directly related to the examples we have previously presented.

1. Action programs may not lend themselves naturally or easily to the combining of theoretical interests with evaluative research. The task of evaluating materials, whether in a formative or summative mode, imposes certain limits on the research design. The foremost concerns of an action agency are pragmatic and the pressing research needs, from the agency's standpoint, deal with questions of design and production of training materials, and the organization and conduct of training programs. It may be that the theoretical interests of the researcher are not measurable within the data collection necessary to evaluate particular materials or sources. We mentioned earlier the constant pressure for immediate research results which the researcher faces in an action agency. This pressure for results may squeeze out theoretical considerations or make it difficult to find time for the more extensive analysis of data that theoretical considerations might demand.

Denzin has recommended that social researchers "should never enter into a research relationship where they lose or give up control over their own activities." This is excellent advice, but the danger is that the researcher will enter an action agency, with good intentions on both his part and the agency's to conduct theoretical research combined with evaluative research, but the everyday pressures for evaluation may cancel out the best of intentions.

Yet it is possible to do theoretical research within the context of an on-going action program. In fact, within the PCP research program, two M.A. theses and a Ph.D. dissertation were completed within a three-year period. But a researcher will need to exert special attention, time and energy to insure that his theoretical interests are built into evaluation research designs.

a. The eventual success or failure of a training program is often the consequence of policy issues which lie outside the domain of evaluative research. The researcher in an action agency may at times feel frustrated because the modifications produced by findings of the evaluative research appear to be insignificant compared with the impact that policy changes can have on a program. A training program for farmers may deal with the use of credit. Training materials may be evaluated as to accuracy, comprehensibility, cultural appropriateness and knowledge gain which they produce. Yet bureaucratic policies in a bank or other institutions may be such that the farmer could know and do everything which the training program has taught him and still be unable to secure credit. Cases similar to this are not uncommon. Unfortunately there are no "all-purpose" solutions to the dilemma which this poses for the researcher.

b. Another concern for the researcher is the impact which evaluative research makes on the action agency. To what extent are research recommendations accepted and implemented? In the PCP experience, the effect of evaluative research appears to be limited to the modification of training design. To put it another way, when research recommends changes that might be considered "minor" and are within the institutional program, they stand a good chance of being implemented. But when changes recommended might be classified as "major," particularly if they suggest structural changes, the likelihood of their acceptance decreases. There is also the possibility that the action agency may use evaluative research as a public relations device to give the institutional programs a more scientific appearance. It may accept and/or publicize those findings which agree with its policy or make it "look good" and reject findings which do not agree with its institutional orientation. In part this is a question of the institution's learning to use research, as we discussed earlier. But it also reflects the reality that institutions operate within political constraints; and in the final decision-making, political considerations may outweigh scientific findings, to the great frustration of the researcher engaged in evaluation.

2. Evaluative research can be a useful tool in the development of instructional materials and modification of training programs. The case study we have presented is not a perfect one, PCP is still in the process of working out its own problems related to the utilization of evaluative research. Nevertheless, our examples demonstrate some positive consequences of evaluative research; it can increase learning in several ways:

a. Evaluative research can give more accurate descriptions of the target learner, in terms of such variables as: age, education, socio-economic level, attitudes toward and knowledge of course content, other sources of knowledge to which the learner may be exposed such as the mass media, other institutions and their educational programs.

b. Evaluative research can assist in the development of instructional materials. It can provide important feedback data on clarity, level of difficulty and understanding, and appropriateness of the materials to the particular cultural setting of the learner.

c. Evaluative research can assess the impact of a particular training course or a series of training efforts. It can furnish answers, with some degree of precision, to such questions as: How much learning actually took place? What attitudes were changed, and how much? What subsequent behavioral change, as advocated by course content occurred?

3. Effective use of evaluative research can only come about through a profound institutional learning experience. Creating a research department by no means guarantees that research activities will have any impact on the planning and development of instructional materials or the conduct of training programs. The curriculum, training and production departments have to learn how to use evaluation, and the research department must learn how to work with the other administrative units. For PCP, it took a considerable period of time to learn how to utilize a research department and an evaluative methodology. For the greater part of the first two years of PCP's existence, much of the evaluation could probably be described as "too little and too late." Cooperation among research, training and production departments did not come immediately and automatically. But, over time, the departments began to learn how to work together; mutual respect and understanding developed, the necessary kinds of interaction began to emerge, and the value of research became evident.

The institutional learning experience implied some practical considerations:

a. Research personnel must be involved in the early planning and discussion of materials, courses and programs. Particularly, the specification of instructional and program objectives should be the joint activity of curriculum, training, production and research people, so that all have a clear idea of the kinds of effects that evaluation research is supposed to identify and measure.

b. There must be a recognition of and planning for the adequate lead-time that evaluation requires. Research is always confronted, in its day-to-day activities, with institutional pressure for immediate results. It is forced to keep pace with the activities and operations of other departments. This creates the bind where, on the one hand, if research operations are not swiftly carried out, results only become available after decisions have already been made. On the other hand, the research process involved definite, time-consuming steps (instrument preparation, data gathering, coding, tabulation, analysis and interpretation) if valid results are to be insured. The necessity of lead-time is often not recognized or understood by institutional leadership or other staff members. The researcher himself may have to develop a working style that will balance the requirements of serious and professional evaluative research with the need for producing results quickly enough so that they represent useful feedback.

c. An atmosphere of confidence and cooperation must be created between the research people and the action people. The institution must come to believe that the kind of knowledge produced by evaluative research is essential to the institution and that research costs in money, time and energy are well invested.

4. It is easier to develop and use models of summative evaluation (research on the effectiveness of completed materials or courses) than it is to develop and use models of formative evaluation (research aimed at testing content modules in the development stages). PCP curriculum training and production people were more willing to have their materials evaluated after the product was finished than they were to take time during the developmental stage to evaluate individual components of the course, film radio or TV program. It may be that this represents some natural human resentment of any interference with the creative process: creative people are sometimes reluctant to interrupt the creative act to assess the effectiveness or the relative contribution of individual components of the instructional product.

While this is understandable, it is unfortunate. Formative evaluation provides a methodology for identifying precisely the strengths and weaknesses of particular segments of a given instructional material. It is much more difficult to pin-point the good and bad features of a TV program when the total program is evaluated after the fact, than it is to evaluate individual program segments as the program is being developed. Furthermore, it is more economical in the long run to identify and correct problem segments in the development stages than to change the whole film, program or training course after it has been completed.

Thus, while it is easier to conduct summative evaluation, it is more efficient to develop an active program of formative evaluation. We should stress that the two kinds of research should not be considered as competing alternatives. Both have their place. Summative evaluation, to assess the overall effectiveness of instructional materials and programs, is a necessary activity, but it should be preceded and complemented by formative research.

Summary

In this chapter, we have looked at a program of non-formal education that contained, within its organizational structure, a research department. Three kinds of research were undertaken: baseline studies, which attempted to describe the target learner and his physical and social environment; formative research, which provided evaluation of training materials in the course of their development; and summative research, which furnished feedback of the effects of materials and training programs on their users.

Several problems were noted: Action agencies are sometimes impatient with the inevitable time lag occurring between design of the research study and availability of research results. Producers of training materials are often skeptical of the value of formative research in helping them develop new materials. Problems of a political nature which lie outside the research design, often have more influence on program outcomes than on modifications which research might suggest.

We noted that utilization of evaluative research by an action agency necessitates a profound institutional process of learning and adjustment. For researchers, production people and trainers to collaborate effectively requires trust, mutual respect and patience with one another. But the building of such a successful collaboration is worthwhile. It can improve the quality of work of all concerned and thus of the non-formal education program. It can increase learning effectiveness.

FOOTNOTES: CHAPTER V

[1] This distinction was developed in Chapter IV of this monograph; also see "The Methodology of Evaluation" by Michael Scriven, in Blaine R. Worthern and James R. Sanders, *Educational Evaluation: Theory and Practice* (Worthington, Ohio: Charles A. Jones Publishing Co., 1973).

[2] The 'ejidatario' can be described as the main intended beneficiary of the Agrarian Reform and the Mexican Revolution. The ejidatario receives land from the 'ejido', a system of land tenure that consists basically of the restitution or outright granting of land to the existing peasant communities as a permanent and inalienable possession. The community in turn is expected to distribute the arable portions of this land among its members and reserves the pastures and woodlands for community use. The ejidatario cannot sell his plot, nor lease it but only to keep the rights of succession for his descendants.

[3] Norman K. Denzin, *Sociological Methods* (Chicago: Aldene Publishing Co., 1970), p. 529.

CHAPTER VI

LEARNING EFFECTIVENESS AND THE COMMUNICATION OF INNOVATIONS

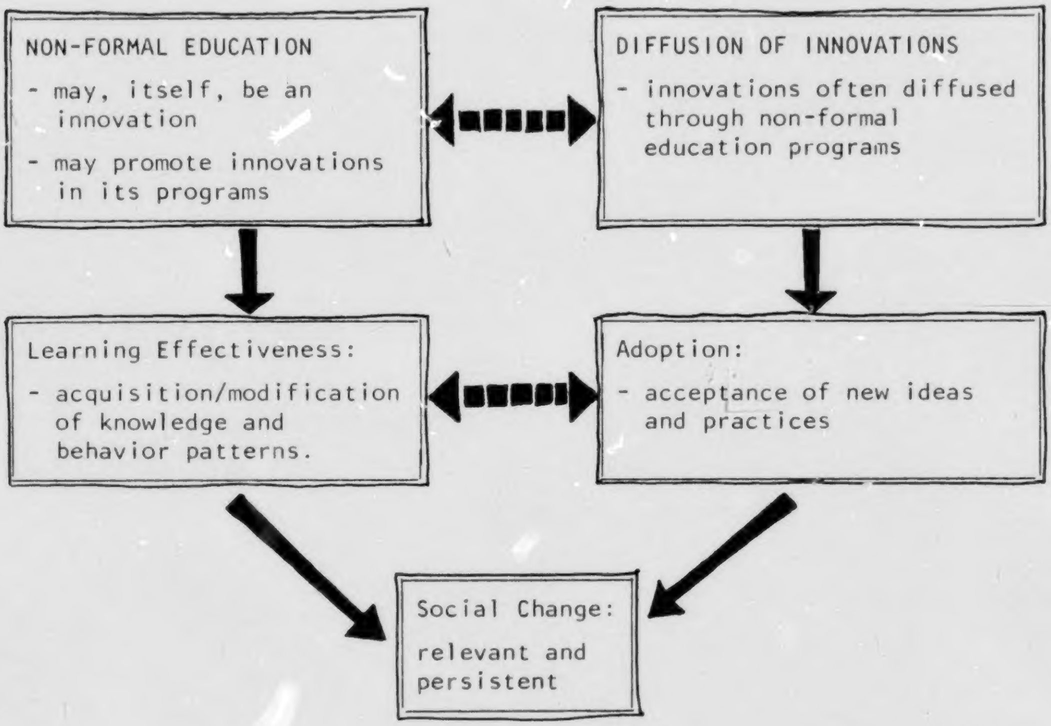
William A. Herzog, Jr.

Non-formal education and diffusion of innovation, as learning processes, have important convergences. Non-formal education is concerned with a practical, applied kind of learning which is often work and job related. Diffusion of innovations deals with the process by which members of a social system learn about and adopt new ideas, practices and products.

Non-formal education may itself be an "innovation" when, as a new approach to learning, it is introduced into a social system. In such instances, a knowledge of diffusion theory would be helpful in understanding the factors related to adoption of non-formal education by the social system.

It is also clear that many non-formal education programs deal with innovations as instructional content: farmers may be taught to use new seeds and fertilizers; married couples may be informed about contraceptive devices; industrial workers may be trained in the use of new tools, equipment or work routines. Innovation may be the subject matter of many non-formal education programs. A knowledge of adopter characteristics and communication channels may help to gain more rapid acceptance and continued use of these innovations.

Both non-formal education and the diffusion of innovations share a concern for the effects of their programs: in the case of non-formal education we may speak of learning effectiveness; the diffusion model refers to adoption. Both aim to produce behavioral change at the individual level and social change at the aggregate level. We can diagram the relationship of non-formal education to the diffusion of innovations as follows:


NON-FORMAL EDUCATION
- may, itself, be an innovation
- may promote innovations in its programs
DIFFUSION OF INNOVATIONS
- innovations often diffused through non-formal education programs
Learning Effectiveness:
- acquisition/modification of knowledge and behavior patterns.
Adoption:
- acceptance of new ideas and practices
Social Change:
relevant and persistent

This paper, then, directs itself to the question: what principles from diffusion theory have relevance for learning effectiveness in non-formal education programs? Or, in terms of our diagram above, what do we know about adoption in the right-hand column that may transfer across to learning effectiveness in the left-hand column?

Diffusion theory can be summarized in a conceptual statement: An innovation is communicated through channels over time to members of a social system (Rogers and Shoemaker, 1971, p. 18). In attempting to relate diffusion theory to learning effectiveness in non-formal education, we will look at the characteristics of the innovation, communication channel strategies, differences between kinds of adopters, and the role and function of change agents.

Characteristics of the Innovation

By "innovation" we mean any idea, practice or product that is perceived as new by a potential adopter. The concept of non-formal education is basically an idea-innovation. Like most idea-innovations, there may be material aspects to the innovation; at some point it may be necessary to deal with buildings and furniture in order to carry out an instructional program. But non-formal education as a concept is concerned with such issues as development of instructional materials related to specific problem areas; adapting instructional programs to learner's schedules; by-passing bureaucratic requirements of curricular development, supervision and accreditation. These relate primarily to ideas and policies, rather than to material products. It is worth noting, however, that most of the empirical research bearing on the diffusion of innovations has focused on material product innovations, rather than idea-innovations.

Diffusion researchers have identified a number of characteristics of the innovation itself which influence the rate and extent of its adoption. The characteristics which seem to be most important in predicting adoption of an innovation are relative advantage, compatibility, complexity, observability and trialability (Rogers and Shoemaker, 1971).

Relative Advantage

An individual will adopt an idea more rapidly if that idea is demonstrated to be better than his current way of doing things. The calculation of advantage may take into account such factors as ease of operation, savings of time, reductions of cost, etc. The United States, for example, is now considering the adoption of the metric system of weights and measurements, an innovation which will have far ranging consequences for the country. Several advantages have been cited for adopting the metric system. The immediate advantage has to do with simplified calculations of the metric system in the use of decimals, rather than the need for converting among feet, pounds, quarts as in our standard system. And there is the more global consideration that conversion to the metric system will make U.S products more desirable on a world market, and particularly for exportation to other countries where the metric system is already in current use. A third advantage is that the United States would be contributing toward a world-wide standardization in scientific and technological measurement. On the other hand, introduction of the metric system would have some serious disadvantages. It would entail a period of changeover in learning the new system where there might be considerable confusion. It would mean that our current U.S. practices and measuring instruments would become obsolete. It would involve high costs in terms of implementing new equipment, changing current measurement systems and the recalculation in terms of metric measurement of our present distances, weights and similar kinds of measurement. In applying relative advantage to learning strategies, perhaps the most important point is that relative advantage must be considered from a standpoint of the learner. It is the perception of advantage to the learner, not to the teacher, that is crucial. A nutritionist, teaching a class in meal-planning to a group of rural housewives, has no difficulty seeing the advantage of a balanced meal. The rural housewife may see the disadvantage of having to learn to cook new foods and to convince her family to eat those foods. Learning effectiveness, in this instance, depends first on the nutritionist coming to understand the disadvantage of the innovation that the housewife perceives. Second, she must convince the housewife that the innovation (balanced meals) has highly advantageous long range consequences for her family and, third, the nutritionist must convince her that the long range advantages greatly outweigh the short term disadvantages. Non-formal education often deals with practical, specific, job-related concerns and innovations. To the extent this is true, non-formal education should represent a more efficient mode for demonstrating relative advantages at the practical applied level.

Compatibility

An individual will adopt the new idea more rapidly to the extent that it is compatible with knowledge, beliefs, and values, that he already holds. For example, one of the problems with introducing programmed instruction as an educational innovation was its incompatibility with the teacher's values and his view of himself as teacher. It took away his role as a lecturer, as a dispenser of knowledge, and cast him instead in the role of an educational resource. Many teachers found this incompatible with their self-concept.

Compatibility also relates to previous experience. Consider an innovation in public health: if an individual is accustomed to receiving medication by injection, it should not be too difficult to convince him to adopt a new medicine that may require the same application. If, however, he has never had experience with a hypodermic needle, there may be considerable resistance to the new medicine. Innovations rarely represent instances of complete compatibility or complete incompatability. In terms of learning effectiveness then, the task becomes a matter of identifying those aspects of the innovation which are most compatible with current practices, values and previous experiences. For example, to take the case of the hypodermic needle mentioned above, it might be pointed out to the potential adopter that receiving medication by injection is not that much different from receiving medication orally.

Complexity

The complexity dimension bears a negative relation to adoption. That is, to the extent that the individual perceives the innovation as more complex, he will be slower to adopt it. There are at least two implications of this proposition for learning effectiveness. In the first place it is the perception of the learner not the teacher that counts. There are instances where agriculture extension programs promoting new fertilizers in developing countries have failed because the extension agent has not taken into account the complexity that the innovation represented to the farmer. Applying the proper amount of fertilizer at the right time did not seem too difficult for the extension agent. But for the farmer, to measure out a precise quantity of fertilizer and apply it according to a rigorous schedule represented a level of complexity with which he was completely unfamiliar. Consequently, the fertilizer was incorrectly applied, it did not produce its intended effect, and the innovation failed. There are numerous cases of family planning programs where birth control procedures, seemingly simple and fool-proof to the change agents, were too complicated for the adopters to follow accurately and population programs failed. Many non-formal education programs work with educationally deprived groups. There is frequently a wide gap between the teacher's experience and the learner's experience! In communication terms, we speak of this as heterophily. Communication breakdowns are frequent in heterophilous situations, particularly when a source of a message fails to take into account that the receiver of the message does not bring the same background and experience into the communication situation that the source does.

A second issue related to complexity deals with the choice of communication channels. A diffusion field experiment carried out in Colombia by Spector and others (1963) found that radio was not as effective as an audio-visual presentation in securing adoption for more complex construction-type innovations such as building stoves or latrines. Here the implication is that selection of communication channels should be related to complexity of the material about the innovation being presented. The verbal channel alone may be adequate for presenting relatively simple material but as the complexity of instruction increases, the use of communication channels to carry the message will have to correspondingly increase. That is, the audio and visual channels will have to be coupled together in order to adequately present the material.

Observability

To the extent that the results of an innovation are visible, the innovation will be more rapidly adopted by others. The results of some kinds of innovations are more clearly visible (observable) than of other kinds. For example, it is relatively simple to demonstrate to farmers that crops will grow bigger and better with fertilizer than without it. It is even possible to demonstrate that students will learn more through one instructional mode than through another.

Because of their essentially practical nature, programs of non-formal education have an advantage in utilizing the observability dimension. The agricultural extension service has, for years, used demonstration farms and other kinds of demonstrations of agricultural techniques. Observability then has two implications for non-formal education programs. First, learning effectiveness would be greater to the extent that the results of innovation can be made visible in the learning situation. Second, the non-formal education program itself will diffuse rapidly to the extent that the program effects are observable to the community as a whole.

Trialability

An innovation will be adopted more rapidly to the extent that it can be experimented with on a trial basis. It is relatively easy for a farmer to plant a small part of his farm with a "miracle variety" seed and compare it with his standard practice. This works reasonably well with product-type material innovations. But it is more difficult to "try out" non-material, idea innovations, particularly when they are of an ideological nature. It is often the case with ideologies that "commitment" rather than "trial" is the only valid mode of involvement if one is to fully accept the ideological innovation (Rowen, 1973).

Non-formal education programs often acquire the aura of ideologies. People come to believe in them because they offer truth, hope, certainty--all the standard attributes of an ideological system. They often adopt the non-formal education program with a largely unquestioning commitment. The point here is that non-formal programs should not be allowed to acquire the status of ideology. Literacy programs often acquire ideological force, which is evidenced by slogans such as: "Each one teach one"; and "The Year for Erradication of Illiteracy." And the results usually indicate that the ideology had some all-too-fallible suppositions. The use of pilot programs and evaluations are practical steps for protesting against the "ideology" syndrome. In effect they substitute trial for commitment; or, at least, they attempt to introduce some empirical bases on which to make the commitment step. Trialability can and should be a characteristic of non-formal programs at their innovation stages.

Learning Effectiveness and Communication Channels

The question of communication channels was touched upon briefly in connection with the issue of complexity of the innovation. Some further comments may be useful. Communication researchers typically make a major division between communication via interpersonal or face-to-face channels and communication via mass media or interposed channels. They have noted that these are distinctly different modes and that each displays its own characteristic strengths and weaknesses.

Mass media channels have the advantage of reaching large heterogeneous audiences in relatively short time periods with comparatively low unit cost per audience member reached. They are useful in presenting new information to the audience. In terms of diffusion of innovations, they create awareness about new ideas or innovations. However, many research studies indicate that the mass media by themselves are relatively ineffective in producing much change in strongly held attitudes and beliefs (DeFleur, 1970, pp. 129-135).

The mass media are essentially one-way information channels. Messages flow from a mass media source of their audiences with very little feedback from audience to the source.

On the other hand, interpersonal channels characteristically provide two-way communication. Information flows in both directions between source and receiver or, more correctly, participants in the communication situation are constantly changing roles from source to receiver and back again to source. Thus, the interpersonal channel facilitates raising questions, giving answers to questions, and providing clarification of uncertainties--all of which are difficult to deal with through mass communication channels. Interpersonal channels represent patterns of interpersonal influence among members of a social system whether it be family, business organization, or informal small group. The norms and values of that social system are operative in the communicative interaction. Because interpersonal communication occurs in a context of group norms and values, it is more effective than the mass media in modifying more strongly held attitudes, and beliefs. One of the basic propositions of diffusion theory holds that mass media channels create knowledge and awareness of the innovation, while interpersonal channels influence and persuade in the actual adoption of the innovation.

It would follow then that an ideal diffusion strategy would combine the capability of mass media for reaching large audiences rapidly with the persuasive power of interpersonal communication in the group setting to produce maximum behavior change. This strategy has, in fact, been utilized in a number of programs of non-formal education, such as the Radio Farm Forum originating in Canada, later utilized in Australia and India. Radio Farm Forums have, in recent years, been introduced in many parts of the developing world. A typical radio forum consists of a radio program of agricultural news and information transmitted from some central broadcasting station. In villages served by the radio station, farmers are organized into listening groups of 10 to 20 members. The groups meet usually on a weekly basis to listen to and discuss ideas which have been presented in the radio program. The group leader is provided with a study guide which suggests questions for application and implementation of the ideas in the particular local situation. There is usually a feedback mechanism whereby questions which arise in the discussion groups can be referred to the program producers for clarification in subsequent broadcasts. The dynamics of the learning situation combine an information input from the mass media with interpersonal communication in a setting where group norms and values may lead to a decision to adopt. Of course, there is also the possibility that group pressure may lead to a decision not to adopt. But the group setting facilitates dealing with such questions as: Would the innovation be useful to us? How would it affect our present activities? What would it cost? What is the likelihood of failure? How would we go about implementing it for ourselves?

Research conducted on the Farm Forums in India indicated that the effectiveness of the program was much greater for those farmers who listened and participated in groups than for farmers in villages where, lacking forums, listening was a solitary experience and occurred in individual homes (Schramm, pp. 153-154). The experience of discussing new information in a peer group setting produced both greater internalization of the program content and group support to put the innovations into practice.

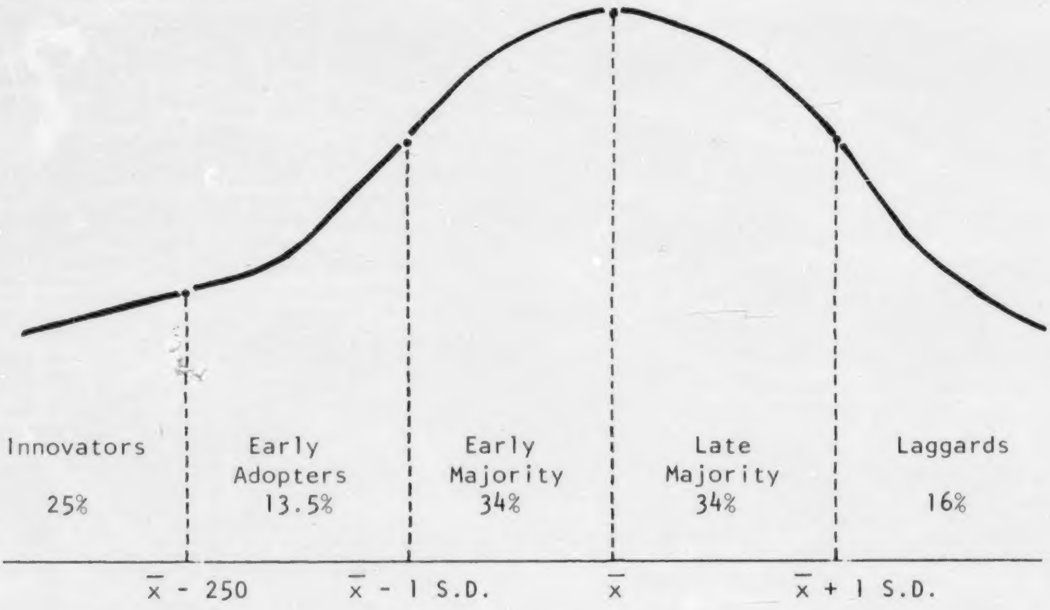
The combination of radio and the listening groups has been effectively utilized in programs of general adult basic education, particularly in Latin America. The prototype and best known of these programs is Radio Sutatenza in Colombia. The program was initiated in 1947 under the control of the Roman Catholic Church with some financial support from the government of Colombia (Torres and Corredor, 1961). The original aim of Radio Sutatenza was to provide literacy training for rural areas, but it has enlarged its programming to include agriculture information, health news, religious instruction, classical and popular music. A similar program was developed in Brazil in the early 1960's known as Movimiento de Educaçao de Base (MEB) or Basic Education Movement. At the zenith of the program in 1963, MEB was operating nineteen broadcasting stations mainly in the northeast of Brazil with 5500 listening groups and 111,000 students. The programs dealt with literacy training, information about improved living habits, principles of community organization and cooperation, and promoted the development of a popular culture. This type of activity was viewed as too radical after the military takeover in 1964, and since then MEB's activities have been greatly reduced (Herzog, 1967).

BEST COPY AVAILABLE

In summary, the combination of radio programs and discussion groups has produced effective learning and behavior change in a number of areas of non-formal education: agriculture extension, literacy training, health and nutrition, and community organization and development.

Learning Effectiveness and Kinds of Adopters

Much of the diffusion research has focused on identifying the characteristics of adopters in order to differentiate those who are early to adopt from those who adopt later. Measured on the basis of time of adoption, individuals have been characterized as innovators, early adopters, early majority, late majority and laggards.[1] It has been observed in many diffusion research studies that, when individual adopters in a social system are plotted according to time of adoption, the distribution approaches a normal curve. The standard deviations of the normal curve provide a statistical basis for categorizing adopters according to time of adoption.



Adopter Categorization. Based on Time of Adoption on a Normal Curve.[2]

Innovators are the first members of a social system to adopt a new idea of practice. They are "mavericks" by nature and less constrained by system norms for maintaining the status quo. They are sometimes referred to as marginal members of the society and often have weak ties to the social system. They are usually cosmpolite oriented more towards the outside world than their own immediate environment. They tend to make use of interpersonal and mass communication channels which put them in contact with new ideas outside of their own social system. The next type, on the time dimension, is the early adopter. He, typically, has better than average resources and makes extensive use of the mass communication channels. The basic difference between innovators and early adopters, in an ideal sense, is that, whereas the innovator has a cosmopolite orientation with strong ties outside his own social system, the early adopter is locally-oriented. He respects the norms of his social system. He is often an opinion leader. Because he is more highly regarded and influential with other members of the system, he is frequently sought out by change agents as one to "model" the innovation. By contrast, the innovator is usually not influential in the community because of his disregard for community norms. The distinction between innovator and early adopter is best expressed by labeling the innovator as "venturesome" and the early adopter as "respectable."

In the middle of the adopter distribution are the early majority and late majority categories. An important characteristic of the early majority is that, while he does adopt ahead of the average time for the system, he takes longer to consider the innovation and make up his mind than the early adopter. He is rarely an opinion leader, but may make extensive use of interpersonal communication channels to discuss the innovation with others. A one-word description of the early majority type would be "deliberate." The late majority also takes longer to make up his mind and does so with more resistance to new ideas. In fact, he adopts the innovation only after it has become a community norm to do so. Where the innovator adopts in spite of group pressure, the late majority adopts in response to such pressure. He can be termed "skeptical."

The fifth and final group is the laggard type. He is the last to adopt and, indeed, may never adopt the innovation. His behavior has little influence on other members of the social system. Just as the innovator is out of step by adopting too soon, the laggard is deviant from the system by adopting too late or not at all. The laggard is conspicuous for few contacts outside of the social system and comparatively little use of mass communication channels. The laggard is the "traditional."

Research shows that adopter types differ in terms of the communication channels they use to receive information. Earlier adopters in all fields tend to watch more television, listen to more radio programs and read more newspapers, magazines and books than do late adopters. And within the local system, it is more characteristic of earlier adopters than later adopters to engage in interpersonal communication about the innovation with friends, neighbors, and colleagues. Earlier adopters are more inclined to seek out information and to have greater knowledge of the innovation than later adopters.

Many non-formal education programs deal with overtly behavioral goals. They aim at teaching new techniques or introducing new products, materials, technologies, which imply an immediate behavioral step. The objective is that the learner will go out and put into practice in the real world that which he has studied theoretically in the learning situation. A main difference between formal and non-formal learning is that, in the non-formal mode, the gap between learning and application is much smaller, both in time and space.

What, then, does this say about applying a typology of adopters to learning effectiveness? First, we can predict that, if left to themselves to convert theory into practice, learners will tend to distribute themselves according to the normal curve: there will be some innovators, early adopters, then the later types followed by the laggards. In other words, learning does not automatically lead to immediate adoption. The diffusion model suggests that there can be considerable slippage between learning and practice and, in fact, some may never make the final step of adoption.

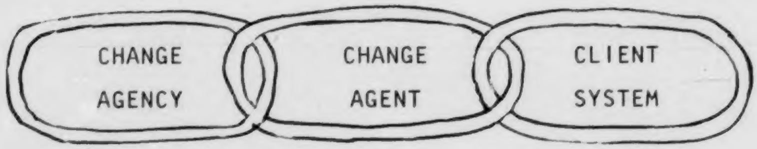
What can be done to reduce the time lag implied by the adoption curve? One proposition implied in the diffusion research is that learning will be more rapidly followed by adoption of the practice as the learning situation more closely approximates the real life situation. When the learning situation demonstrates the relative advantage of the new idea, allays fears about its complexity, shows its compatibility with current practice, and makes it observable in a trial situation, we can predict more rapid adoption. These characteristics are most effectively demonstrated in terms of the learner's own life experience. All of this makes a strong case for on-the-job training and making the learning situation as much like the job or application setting as possible. One of the real strengths of non-formal education is its potential capacity for deriving new strategies for reducing the gap between learning situation and real-life application.

Learning Effectiveness and the Change Agent

A key actor in the diffusion process is the change agent, that member of a change agency who works directly with the client system to secure the adoption of the change agency's innovations. Agricultural extension services employ "county agents" or "extension agents," family planning programs have their paramedics. Pharmaceutical houses use "detail men" who visit medical doctors to introduce them to their company's latest drugs and medicines. In education, teachers are intended to function as change agents. (Obviously this is not always the case, since many educational systems are resistant to innovation and too often teachers function principally to maintain the status quo.)

But assuming that in non-formal education the teacher or instructional technician can be regarded as a change agent, the diffusion model provides some interesting perspectives on this person and his role. The change agent can be viewed as the link between two systems, the change agency and the client system:

BEST COPY AVAILABLE



As link between, he must identify with and relate to both systems. As representative of the change agency, he reflects the values and goals of his employer. But to be effective in the client system, he must understand the values and goals of that system. Yet the values and goals of the two systems are rarely identical and herein lies the dilemma of the change agent: how to effectively advance the goals of the change agency yet maintain the trust of the clients, when values and goals of the two systems are in conflict?

Rogers and Shoemaker summarize a number of diffusion studies with the proposition that "change agent success is positively related to homophily with clients" (1971, p. 242). Homophily refers to degree of likeness between change agent and members of the client system: the extent to which he is like them (and able to identify with them) on such variables as social status, age, education, cosmopoliteness. Yet there is a sense in which the change agent cannot become entirely conformed to the client system or he loses his effectiveness as change agent. He represents a level of knowledge and expertise which the client does not have, otherwise there is no change which he can bring to the client. If he identifies too completely with the client, he may lose his capacity to function as a representative of the change agency. So the change agent may find himself in a state of ambiguity and tension (hopefully a creative tension), produced by conflicting needs, values and goals of two different systems.

Probably the most critical function which the change agent serves is that of communicative link between the two systems. From the change agency to the client system he carries information about innovations, technical specifications for new practices and procedures, sometimes a whole new approach for a problem area. But he also fulfills a feedback function in communicating client system needs to the change agency and in reporting back to the change agency the effectiveness of the change program. Thus the diffusion perspective defines the change agent as foremost a communicator, with the requirement that he keep communication flowing in both directions.

Non-formal education programs have verified the relevance of these principles. In "animation programs" of rural development in Senegal, promising individuals were selected out of villages, taken to training sites for short periods (three days to two weeks), and given intensive training in identifying and dealing with village problems (Hapwood, 1964). The goal of the animation program was to produce a change agent who had technical competence, but who maintained a high level of homophily with the village. He had the expertise to help his client, but he remained one of them. In Northeast Brazil, a literacy program Cruzada ABC, used 15-year old volunteer teachers from the community who had only a primary education and gave them intensive training as literacy teachers (Realidade, 1966). They were effective because they knew the community, and the students in the literacy classes knew them.

The principle of homophily applied to change agents is a special case of the general rule that communication is more effective among individuals who are more alike. It suggests that homophily between teacher and student is a necessary ingredient for learning effectiveness.

Summary

In this chapter we have attempted to demonstrate the applicability of diffusion theory as it applies to learning effectiveness in the non-formal mode. We described the diffusion process as an innovation communicated through certain channels over time among members of a social system. We noted characteristics of the innovation which affect the rate of its adoption by members of a social system: relative advantage, compatibility, complexity, trialability, and observability. We discussed advantages and disadvantages of both mass and interpersonal communication channels, and suggested strategies for combining interpersonal and mass communication to diffuse information about innovations so as to maximize adoption of the innovation. We further noted that individual members of a social system can be classified according to the relative earliness or lateness with which they adopt an innovation as it enters the social system. The adopter types are: innovators, early adopters, early majority, late majority and laggards. Finally, we specified the role of the change agent as communication link between the change agent and client system. Each of these aspects of the diffusion model was discussed in terms of its relevance for learning effectiveness and applicability to non-formal education.

FOOTNOTES: CHAPTER VI

[1] The diffusion research on adopter categories has been summarized by Rogers and Shoemaker, 1971, pp. 174-196. This section is based, in part, on their summary.

[2] From Rogers and Shoemaker, 1971, p. 182.

REFERENCES CITED

DeFleur, Melvin L. *Theories of Mass Communication.* New York: David McKay Company, Inc., 2d ed., 1970.

Hapgood, David. "Rural Animation in Senegal." *International Development Review,* Vol. 6, No. 3 (1964), 15-18.

Herzog, William A., Jr. "The Utilization of Radio and Television for Adult Education in Brazil." Unpublished paper, East Lansing, Michigan State University, 1967.

Klapper, Joseph T. *The Effects of Mass Communication.* New York: The Free Press of Glencoe, 1960.

(Author not Identified). "E Hora de Aprender." *Realidade.* Rio de Janeiro. October, 1968, pp. 98-108.

Rogers, Everett M. with F. Floyd Shoemaker. *Communication of Innovations.* New York: The Free Press, 1971.

Rowen, Samuel F. "Symbolic Decisions and the Diffusion of Innovation." Unpublished paper, East Lansing, Michigan State University, 1973.

Schramm, Wilbur. *Mass Media and National Development.* Stanford: University of Stanford Press, 1964.

Spector, Paul, *et al.* "Communication and Motivation in Community Development: An Experiment." Research Report to Agency for International Development, Washington, D.C., 1963.

Torres, Camilo and Berta Corredor. *Las Escuelas Radiofonicas de Sutatenza.* Bogota: Centro de Investigaciones Sociales, 1961.

THE CASE OF THE DISAPPEARING DISTINCTION:
FORMAL AND NON FORMAL EDUCATION IN CHINA

F. Donald Sawyer
and
Ted Ward

Large-scale social experiments fascinate scholars. Historians point to periods of fundamental change in the direction of human development. Sociologists point to incursions of government into causes of human welfare. Educators point to restructuring of the roles of schooling in a society. Today the eyes of all of these and others are focused on China. During a century begun in the dimness of a medieval veil, subsequently clouded by war and obscured by the confusion of revolution and by the blinding ostracism of other great powers, a "new" nation has emerged: the largest in the world. China, rich in the traditions of its own persistent past, yet dazzling in its capability of selectively breaking with what it sees as the inhibitions among those traditions, is very much a reality and very much with us.

Motivated in large measure by curiosity, some by fear and anxiety and some by a deep need to rebut and denounce, scholars are attempting to make up for the decades of dimness, the century of neglect. To China!

Certainly there are dangers and potentialities for profound misunderstanding. We lack a history of continuous informational involvement, much less scholarly interaction with China. It is easy to read too much into the newly available bits and pieces of data. We don't yet know the credibility of sources. We cannot see the total context which gives the information more full meaning. Thus we proceed with caution.

The rapidly increasing documentary information from European, American, and Oriental sources coupled with the still rare but now available first-hand scholarly observations within China make possible a responsible use of China as an illustration, at least. Early in the development of this monograph a colleague returned from a sojourn of several months with his brother, a cadre in Fukien Province. Though the interpretations and conclusions are those of the authors, the value of Dr. Joseph J. Lee's information is gratefully acknowledged.

The Distinction Between Formal and Non-Formal Education

Worldwide, education is changing. Purposes, techniques, and institutional forms are changing. Educational reform is in the center of public attention in many countries. Formal institutions are being challenged to reduce costs while providing more diversified services to a greater number of people. As a result, innovation is a major theme. Innovation is occurring not only in formal education, but to an increasing extent it is also stimulating the expansion of non-formal education. There has been an increased awareness that non-formal modes of education hold great promise, for the developing countries as well as for the developed ones. Along with promises, there seem always to be some problems. To get a balanced picture of the new interest in non-formal education, one must look at both the problems and the promises.

"Non-formal education" is a negative descriptor, and thus it says less than the term "formal education." (It is like describing an automobile by saying it is a non-horse, non-airplane, non-boat, etc.). Often "non-formal" has been understood by the layman as being without form or discernable structure, organization, or purpose. "Formal" on the other hand connotes procedure, purpose, form, and order. Yet almost all of education--not just formal schools--in the community, the home, church, industry, and other social institutions and business organizations have form. If a distinction is to be drawn it had best be between "schooling" and "other than schooling." The term "schooling" is even more descriptive than "formal education" to denote the particular sort of education provided by the educational establishments.

Non-formal education usually indicates that sort of education that is "non-school." Indeed the issue is "non-school" rather than "without form." The distinction then is not the matter of "form" versus "formless"; rather it is non-formal agencies as distinct from the formal agencies and institutions.

Formal agencies are given over to education as their primary purpose; non-formal education is more apt to be seen as a means to an end. Usually non-formal education focuses on improvement of social and personal living, occupational capability, and vocational competency. In large-scale planned societies education has worth in terms of its contribution to the state or to the whole society, rather than to individuals. In these emphases, education is not the goal; it is rather the means to the goal. Education is of concern because of what it can and will do for the learner or the society rather than for any intrinsic value. It is of value only as it can help the student to make changes in himself and his environment in accord with his goals or the goals of the society.

Formal education has come to be seen as having intrinsic value in most modern societies; whereas non-formal education in modern as well as developing societies is almost always seen to have functional or practical value in terms of the utility of the learning it produces.

"Formal" and "non-formal" can also refer to the administrative structure and style of the educational effort--or even the arbitrary labeling of the management or sponsor. A family-planning program differs from a primary school on the basis of administration and mode of delivery. The family-planning program is non-formal education and the primary school is formal. Yet both are in a basic sense formal and institutionalized. The military services teach basic mathematics, and so do primary schools. Because of the lack of label "school" on the former, it is non-formal education, while the primary school is formal.

By using the above understanding of non-formal education, we can see that the military services, youth corps operations, agricultural extension and the like are all concerned with non-formal education. Indeed, they are concerned with educating, but they do not lack form or structure. To call them "non-formal" stretches the language quite far. It might be more precise to call them "non-school." Here we are again in semantic difficulty because they may call their educative operations "schools."

Yet the key to understanding the uniqueness and dynamism of the Chinese educational system lies precisely in this matter of definition and separation. The People's Republic of China has not allowed itself to be bound by semantics or traditional segmentation. Instead it has integrated the diverse facets of non-formal and formal education with the realities of its social and economic situation to create a vast social and educational movement that is truly staggering in its objectives and revolutionary in its methodology.

Educational Transformation in China

Throughout the history of the Chinese Communist movement Mao Tse-tung's basic goal for education has been stunning in its scope: the total psychological remaking of the entire Chinese population into "new socialist men" so as to create and effect a program of economic and social development that is at once revolutionary, Marxist, and uniquely Chinese in character. Moreover, to the astonishment of opponents within China and critics outside, the Chinese educational system appears to be approaching, though often haltingly and not without setbacks and failure, this seemingly impossible objective.

Education in China is complex. It cannot properly be evaluated apart from the ideological and organizational currents of the larger Chinese social experiment. It is apparent that the remarkable transformation of the Chinese society which has occurred over the past two decades has been accomplished not only through the schools, which enroll less than one-seventh of the population, but also through a non-formal educational system that is one of the most extensive, elaborate, and effective in the world. Whereas in most developed countries the formal educational structure can usually, and justifiably, be regarded as the primary institution for the transmission of skills and culture not otherwise obtained through informal socialization, in China it is not primarily given to the schools to carry out these responsibilities.

The most revolutionary and original aspect of the Chinese educational system is neither the formal nor non-formal sectors but the integration of the two in a dynamic, process-oriented program of mass education. China has been moving toward a new national-scope model of education that defies labels, using non-formal methods in its schools and employing formal pedagogical techniques in its non-formal programs to such an extent that the distinctions become blurred and the divisions become largely meaningless.

Can an educational process which in 1958 (when illiteracy was estimated at more than 60%) involved an incredible 96% of the adult population in some form of training for political participation be viewed as merely non-formal?[1] Is a social educational system which involves at least two-thirds of China's adults in regularly scheduled (most at least daily) face-to-face small group discussions of centrally generated messages with a recognized opinion leader (cadre) be regarded as non-formal? Considering the status of China's transportation and communication system and her immense size, can the educational implications of a system that can reach virtually every man, woman and child with any given message be lightly regarded? On the other hand, can a school system which insists that its participants, from kindergarten students to college professors, combine theory and practice by engaging in productive labor for 10 to 20% of their schedule and which often has schools operating in factories and communes run by the workers themselves be regarded as formal education? Is an educational system which (1) is avowedly non-elitist, (2) does not select its students through competitive entrance exams but on the basis of peer group recommendation, social consciousness, and dedication, (3) usually does not even issue credentials to its graduates, and (4) whose pedagogy relies primarily on the creativity of the participants in investigating, comprehending, evaluating, and changing their immediate environment, formal or non-formal? Obviously, the criteria we generally use to distinguish the two are largely inapplicable to the emerging situation in China.

This paper, then, will not attempt to delineate artificial divisions but rather to convery a general and often speculatory impression of the overall Chinese educational system. It will attempt to very briefly summarize the historical and social development of the current Chinese system, describe its operation, then treat lightly some possible explanations for its apparent effectiveness. Finally, in conclusion, some of the international implications of this model, particularly in regard to the question of whether and to what extent the Chinese model is applicable to other less developed countries, will be discussed.

Red versus Expert: Educational Development in China Under the Communists

Traditionally, formal education in China was geared to the successful completion of the Imperial Civil Service Exams and was concerned with memorization, conformity, and emulation. Committing to memory hundreds of pages from the classics and learning to imitate elaborate and ancient literary styles took a minimum of ten year's intensive (and expensive) study and thus eliminated from contention for government positions any but children of the scholar-gentry ruling class. With but few exceptions, the 90% of China's population who made up the peasantry were deprived of access to the learning necessary to pass the exams, though the exams were theoretically open to all. The common people obtained only the informal, practical education passed on from generation to generation. Taking into consideration that this system of elitist education remained intact for nearly 2000 years, the transformation under the Communists becomes even more remarkable. As Marilyn Tinsman puts it,

> [over the past century] . . . China's education sector has taken a 180° turn, from a system of mainly private tutoring for the privileged society, devoted to studying classics of the past, to mass education favoring the peasants and workers and concentrating upon an uncertain future where science and technology are to figure heavily.[2]

While the extent of this change and its social impact cannot be over-emphasized, it should be noted that Mao, being a classical scholar as well as a modern revolutionary, can find Confucian as well as Marxist substantiation for his belief in the unlimited capacity of men to re-educate themselves. Both Confucious and Mencius held that the primary differences in men were attributable to environmental disparities, while "by nature men are the same, through practice they came to be different."[3] Mao believes that while a

> man's consciousness is shaped, in the first instance, by his material environment, . . . he is naturally endowed with the rational capacity to formulate ideas which, when put into practice, can change that environment . . . . The function of education, then, is to provide the intellectual and technical tools that will allow man to unite theory and practice effectively and contribute to the historic process leading towards Socialism and Communism.[4]

By this definition, the educational process, while designed to create a Socialist society, must be dependent on and arise from local needs and conditions so that the people, through mass mobilization and participation, can change their world and thereby change themselves.

The transition from Imperial exams to post-Cultural Revolution mass education did not occur in a vacuum. It was accomplished only after revolution, civil war, continuous experimentation, and strong opposition within the Communist Party itself. A number of writers have noted that the educational reforms of the Cultural Revolution can be traced directly to the years from 1935 to 1946, known as the Yenan period, when the Kuomintang forced the Communists from their stronghold in south-central China to the border regions of the north. Here Mao's educational policies were, for the first time, seriously tested in practice. During this period of educational trial and error, virtually all of the reforms later advocated by Mao and his supporters during the Great Leap Forward and the Cultural Revolution were hammered out through intensive experimentation.

Education in Yenan went through the same phases that were to be repeated later in China as a whole. Consider the situation which Mao's followers encountered in Yenan: after a period of almost frantic

BEST COPY AVAILABLE

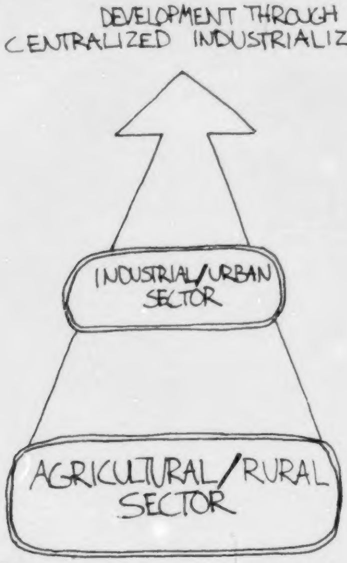
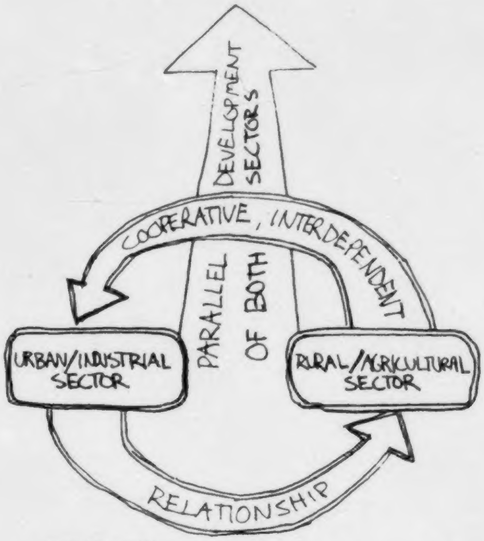
initial growth it had become clear that formal education was being greeted with great skepticism by the majority of the area's inhabitants, 99% of whom were illiterate and still remembered all too vividly the famine a decade before which had killed 2,800,000 people, one-third of the population, in Shensi Province alone. To a people whose life was a daily struggle for survival, mastering the Chinese written language seemed to be highly irrelevant to their concrete needs and unjustifiable in terms of the time and energy required. Instead of seeking guidelines for educational reform by listening to the people and considering their perceived concerns, planners of the Regional Department of Education decided that the problem was a lack of central planning and consolidation. As a result they instituted a plan for accountability and standardization of the school system that almost proved disastrous.

> When they [education planners] sought standards on which to base improvement in the Border Region schools, they drew on their own urban experience. They tried to make schools in rural North-West China conform to the standards of those in Shanghai which, in turn, were copies of schools in industrialized Western countries. The result was a programme so obviously inappropriate, it provided a mandate for radical change.[5]

The effects were vitrually identical to those of later centralist or "elitist" periods in Chinese education during the first Soviet-styled five year plan and again after the failure of the Great Leap Forward in the early 60's. Basically, the teachers became a professional elite removed from the concerns or labor of the masses while students, selected on the basis of competitive academic exams which favored children of the old ruling class, also became an elite without social or class consciousness. The curriculum became increasingly abstract and irrelevant to the actual needs of the masses. Control became centralized and teachers and administrators were not accountable to the people of their community but to higher level bureaucrats while rural schools were phased out and consolidated with "healthy" urban central schools. The effect on the student makeup can be easily imagined--the vast majority came from the families of landlords, urban-dwellers, and the old intelligentsia.

Reaction was not long in coming. In 1942-43, only two years after the standardization policies were issued, criticism was leveled at these policies which eventually led to a new, decentralized system of mass education based on a new interpretation of Mao's statement that Chinese education should be "national, scientific and mass." "National" now meant a rejection of Western models developed from different economic conditions and designed to promulgate an elitist, capitalistic socio-economic system. The new Chinese education would be indigenous and stem from truly Chinese conditions. "Scientific" meant that it would be determined by empirical means, by systematic investigation of actual conditions and thereby devoting itself to arriving at new ways of solving concrete problems. "Mass" meant that the new Chinese education would be addressed to problems which masses considered important and which would elicit their voluntary participation. The policies of the earlier Yenan period had failed not from a lack of standardization but from a lack of faith in and contact with the masses. Now the masses were to be involved in every facet of educational decision making. "From the masses to the masses" became the mass line slogan. Mandatory work-study schools, the abolishing of old entrance exams and favoring instead those who stood to benefit the most and contribute the most, and extensive decentralization of control and policy implementation to insure that schools would better serve the local needs were some of the results of these new policies based on the "mass line."

As already mentioned, the struggles of the Yenan period were to be repeated on a national scale until the mass line finally re-emerged triumphant with the conclusion of the Cultural Revolution. The intervening 25 years saw repeated vacillation between Mao's "Red" line of overall social development and the "expert" or Soviet line of his opponents, most notably Liu Shao-chi. From the beginning Mao has rejected both the Soviet "revisionist" and Western capitalist linear models of economic development based on heavy industry that extracts from the rural sector to develop the urban. Mao believes this places a heavy burden on the peasantry while providing better conditions and greater rewards for the factory workers and managerial class. Instead he has formulated a model of economic development designed to meet China's national needs based on the decentralization of government and economy, the equalization of wealth, the principles of cooperation and sacrifice for the common good, and designed to develop both the urban and rural sectors simultaneously. In finding unique solutions to China's unique problems, Mao is trying to create a dynamic, popular process of social development which "comes from the masses and serves the masses"; avoids individualism, over-urbanization, consumerism and centralism, and which is free from political or economic elites motivated by personal aspirations.

WESTERN/SOVIET "UNBALANCED" OR LINEAR MODERNIZATION MODEL	CHINESE "BALANCED" MODERNIZATION MODEL
 DEVELOPMENT THROUGH CENTRALIZED INDUSTRIALIZATION INDUSTRIAL/URBAN SECTOR AGRICULTURAL/RURAL SECTOR	 DEVELOPMENT SECTORS PARALLEL OF BOTH COOPERATIVE, INTERDEPENDENT RELATIONSHIP URBAN/INDUSTRIAL SECTOR RURAL/AGRICULTURAL SECTOR
ESULTS: – URBAN ELITE (MANAGERS AND TECHNICIANS) – CENTRALIZED ECONOMIC AND POLITICAL CONTROL – URBANIZATION – CONSUMERISM – SCHOOLS DESIGNED FOR INDUSTRIAL EFFICIENCY – UNEQUAL DEVELOPMENT AND DISTRIBUTION OF WEALTH	**RESULTS:** – DECENTRALIZATION OF INDUSTRY – INCREASED IMPORTANCE AND PRESTIGE – PARALLEL DEVELOPMENT OF BOTH SECTORS – DECENTRALIZATION OF POLITICAL AND ECONOMIC CONTROL – LESS CHANCE OF CREATING AN URBAN-MANAGERIAL ELITE

Opposing this Red line were the experts, or in Maoist terms the revisionists, who favored development along the Soviet lines of the first five-year plan. This position sacrificed political purity for efficiency and increased production. It emphasized centralism, "*revolution from the top down*," and the development of intellectual and managerial elites.

Educationally these same lines were drawn in that the educational policies of each faction reflected their larger priorities and philosophies. For example, the Red educational line favored training students on the basis of their class origin and political consciousness so as to avoid the creation of an intelligentsia, while the experts encouraged entrance to schools on a competitive and strictly academic basis. The experts generally opposed manual labor for upper echelon students, while Mao insisted upon it for all. At stake was the question of whose general philosophy would dominate, thus determining the educational model and influencing the new crop of political leaders. If the expert line were successful, they would be Party trained, elite cadres. If Mao's policies triumphed, the new leaders would be products of class struggle. Chronologically, the Red vs. expert conflict can be separated into these general periods.

1949-1955: Soviet centralism, Kao Kang dominant

1955-1957: Partial decentralization to the provincial level. Mao influential but not yet dominant.

1958-1960: Great Leap Forward. Total decentralization with Mao in command.

1960-1965: Reemergence of centralism. Liu in power. Mao ascending towards end of period.

1966-1968: Cultural Revolution. Mao becomes dominant. Destruction of the central Party structure. Schools closed.

1968-----: Post-Cultural Revolution

While the fight between the two factions to control the schools paralleled the struggle in other facets of society, as already mentioned, the educational battle was regarded as being especially critical.

> The importance attached by the Chinese Communists to ideology is reflected in their acute concern with education, because education is the instrument for inculcating the ideology into the minds and hearts of the people, particularly the young. . . . Thus it can be said that whoever controls the schools determines the character of the "successor generation." As the political struggle became more acute, the issue of who controlled the schools became critical.[7]

For the first years after the Revolution the educational policies reflected the conservative policies of the Soviet-backed first five-year plan. By 1955 only 28% of China's college or university students were from peasant or worker backgrounds,[8] and this period also saw a similar growth of elitism in the Party itself. Partially in response to this situation, Mao initiated the Hundred Flowers Campaign by mobilizing the students to criticize the revisionist tendencies within the Party. Criticism, however, emanated not only from the left as Mao had anticipated, but from the right as well. They criticized the work-study programs, political control of the universities, collectivization, the favoring of students from peasant and worker families, and practically every other aspect of the Party's policies. The criticism of the Party cadre elite Mao welcomed, but the appearance of such elitism among the students themselves in criticizing the fundamental tenets of socialism convinced him that "the existing education system was undermining the revolution." He quickly laid plans to make radical alterations.

First Mao introduced the "hsia-fan" movement where thousands of students were "sent down" to the countryside to learn class consciousness and humility from the peasantry. He then proceeded with one of the most ambitious social programs ever undertaken, the Great Leap Forward, which was designed to stave off the stagnation he saw developing and to meet China's pressing social as well as economic needs.

The accomplishments of the short-lived Great Leap Forward in the area of education were dramatic. Enrollment procedures were democratized until by late 1960, 66.8% of Peking University students were from peasant and worker backgrounds. Schools were redesigned along Yenan lines to produce "new socialist men" and were changed from

BEST COPY AVAILABLE

"bourgeois havens" into revolutionary environments. The new educational system differed radically from both the Soviet and Anglo-American education systems--work-study became prominent again, and students participated in building dams, buildings, and other public works across China. The result was new dedication on the part of the students. They felt that the Party was finally implementing their stated ideals, and the same students who only months before had bitterly criticized the Party were swept up in this brief period of soaring optimism and excitement.

The Great Leap failed. Pro-Maoists claim its demise was due to the treachery of the Liuists who feared this extraordinary decentralization scheme and shifted priority away from Mao's policies, but certainly three years of bad weather, phenomenal population growth, and poor organization exacerbated inherent weaknesses in the program. Then a new period of centralization ensued. By 1965 most of the Great Leap Forward reforms in education had been rooled back, and Chinese education once again became hierarchical and elitist. For example, at Peking University by 1962, 37.7% of the students were from peasant and worker families. Many students, especially those from peasant backgrounds who lost their preferred status due to the reinstatement of competitive academic entrance exams, found this situation untenable. Their aspirations had been irrevocably raised, and they insisted the Party live up to its rhetoric. The tension and pressure built until a crisis was at hand. In the spring of 1966 the situation finally climaxed; the Great Proletarian Cultural Revolution began on the campus of Peking University.

John Israel has called this upheaval "the greatest student movement in history" and goes on to explain the motivations and makeup of the young Red Guards.

> These were neither robots or juvenile delinquents, though there were elements of each, but genuinely frustrated and alienated young people . . . "protesting the failure of the revolutionary order to live up to the ideals of the Revolution. They were protesting the degeneration of the Communist Party from a lean, spartan, self-sacrificing harbinger of change to a complacent, avaricious, self-seeking bulwark of the status-quo. This, as they saw it was the road to a grey, Soviet-style, apparatchik-ridden bureaucratic state, and they were having none of it."

And, while "respect for the expert is familiar to the American experience, and it somehow seems unnatural to us that students should resist preparation for specialized careers,"[9] such was the case among the idealistic and politically involved students of China.

The result was a mass mobilization of virtually the entire country through the efforts of the deeply committed and highly politicized students in order to counter the growing elitism arising from Liu's centralist policies.

Mao, of course, had not acted as merely an interested bystander during the formative months of the Cultural Revolution. On the contrary, he had been engaged in a struggle for supremacy since his downfall in 1959 at the Lushan Conference where he had given up the Presidency to Liu Shao-chi. The Cultural Revolution was a culmination of that battle. It is also evident that Mao held considerable power even during the period immediately following the Great Leap Forward, and he was able to wield enough influence to stave off an outright forcible repression of the student rebellion, especially since his supporters controlled the army. Nonetheless, this in no way compromises the validity of the student uprising. Indeed Mao homself had no assurances as to what direction the Cultural Revolution would ultimately take.

In the countryside the underlying anarchism of the student movement was not lost on the anti-official peasantry who rallied to the anti-state, power-levelling doctrines of the students. The Red Guards not only put Mao in control of Peking, but by October of 1967 had swept away the Party bosses in 26 of the 27 political districts. Not stopping here, this national student upheaval soon spread, through the students' cadre activities, among factories and farms welding a "new nationalism of the people."

It is clear that the Mao line is dominant once again, and, despite the fact that he had to use the People's Liberation Army to defuse the torrent of idealistic students he had unleashed, it is also clear that the vast majority of students in China actively and woleheartedly support this line. Furthermore, if an elite should arise again within the Party or the society at large, of if the schools should once again become too far removed from the people and the ideals of the Revolution, those same students or their successors are still present, still idealistic, and ready to mobilize once again.

Education in China Today--The Yenan Legacy

> . . . Maoism is forthrightly a class ideology; it is designed to serve the interests of particularly the proletariat and the poor and lower-middle peasants. The limitations are probably of little concern to this group for there is not much evidence that they prefer the revisionist line or feel restricted by the Maoist line. On the contrary, Maoism is an invitation to play a much greater role in determining the course of their lives. This is the unfulfilled promise of the Yenan mass line which has been reasserted during the Cultural Revolution.[10]

No sector of Chinese society has felt the impact of the Cultural Revolution and its aftermath more than the educational structure itself. The changes have been profound in their intent and broad in their effect. Mao has tried to create not a disembodied system of schools operating in a social vacuum but instead to transform the entire society into one gigantic, integrated process of education and re-education. The key to this bold attempt has been decentralization of educational control. The Party establishes basic principles that determine the general intent and direction education will take by stipulating and promulgating such tenets as "our education ought to be proletarian, ought not to be the monopoly of a small group of society, and ought not be divorced from life . . . or become the entrance way to power and wealth,"[11] but the decisions as to how these principles should be put into practice are almost entirely left up to the local populace who implement them according to local objectives, limitations, problems, resources, and needs. One of the results of this massive decentralization and reconceptualization of "education to serve the masses" has been the direct involvement of virtually the entire nation in educational planning, implementation, and participation. This moved Ross Terrill to observe after his recent visit to China that "the Chinese nation is studying as if for some cosmic examination."

BEST COPY AVAILABLE

Accompanying this new involvement has been a dramatic upsurge in literacy (now placed at 90%, compared by the Chinese to 20-30% in 1949),[12] and the publication of books, journals, and local papers. In an article written in 1972, Rhea Menzel Whitehead discusses some of the results of this decentralization.

> Since the Cultural Revolution, decentralization and relaxation of "state standards" has allowed a great deal more local control of schools, both urban and rural. Communist China has always relied heavily on private, run-by-the-people schools to provide supplementary school places. These schools have sometimes come into conflict with official regulations on academic standards, school hours, and age requirements. Many begun during the Great Leap were later closed. More recently, they appear to be flourishing anew as factories, neighborhoods, and rural brigades organize their own schools.[13]

Within the schools themselves drastic changes are taking place. From pre-schools to universities exhortations to "unite theory and practice" and to "serve the working people" are manifesting themselves in fresh and often highly innovative ways. Generally, these new policies can be seen in a renewed emphasis on productive labor--sometimes occupying as much as 50% of the students' time; a revamping of curricula to make them more ideologically and practically relevant; the consolidation and shortening of courses (which also involves the revision and simplification of many texts); the virtual abolition of academic failure, and a new emphasis on political and class consciousness both in content and student selection procedures. In reference to this last matter it is interesting to note that the three main documents forming the core of most early ideological education in China were all written by Mao during the Yenan period.

Attempts to reduce the pattern of schooling to a chart--a favorite analytical tool of the West--reflect the dilemma of those who attempt to describe the educational "system" that has emerged in China. Much simpler in purposes and ideology than education in the West, the Chinese situation nevertheless demands the uses of "foggy" dotted lines. The junctiure between formal and non-formal (precisely, between schooling and non-schooling) and the interposing of work experiences as designated function of education are well illustrated in Stewart E. Fraser's attempt to diagram contemporary Chinese education.

White sweeping changes are visible in the primary and middle (or secondary) schools, the magnitude of change is perhaps most visible in the colleges and universities. Possibly the single factor most indicative of the degree of change in Chinese higher education is the estimate that 97 to 98% of students enrolled in Chinese universities are from peasant and worker families.[14] This contrasts with less ahtn 28% in 1956. To further underscore the new makeup of the student body, Terrill found that between 70 and 90% of the university students were members of the Communist Party or the Communist Youth League. This not only indicates a high degree of homogeneity of political philosophy and commitment, but it also reflects new selection procedures as well. Before any student can enter a college or university, he must serve a minimum of two years in the army, in a factory, or on a farm. Students leaving secondary school are assigned to a production position on the basis of their interests and the national needs and must be highly recommended by this local production unit before being allowed to enter an institute of higher education. The prime criteria for selection is that the student be "politically sound and physically fit." In fact, if the person's political credentials are impressive enough, it is not even necessary for him to have completed middle school in order to gain entrance to a university. This "post (secondary) graduation work experience" has been called "perhaps the most significant change which has taken place with regard to secondary education since the Great Proletarian Cultural Revolution."[15] The effect of these new policies is the avoidance of what has been called the "three door students, those who have gone straight from the door of the home, to the door of the school, to the door of the office, where they become bureaucrats who have little contact with real life or ordinary people."[16] It has also boosted the average age of college students--a person must now be at least twenty years old to enter.

BEST COPY AVAILABLE

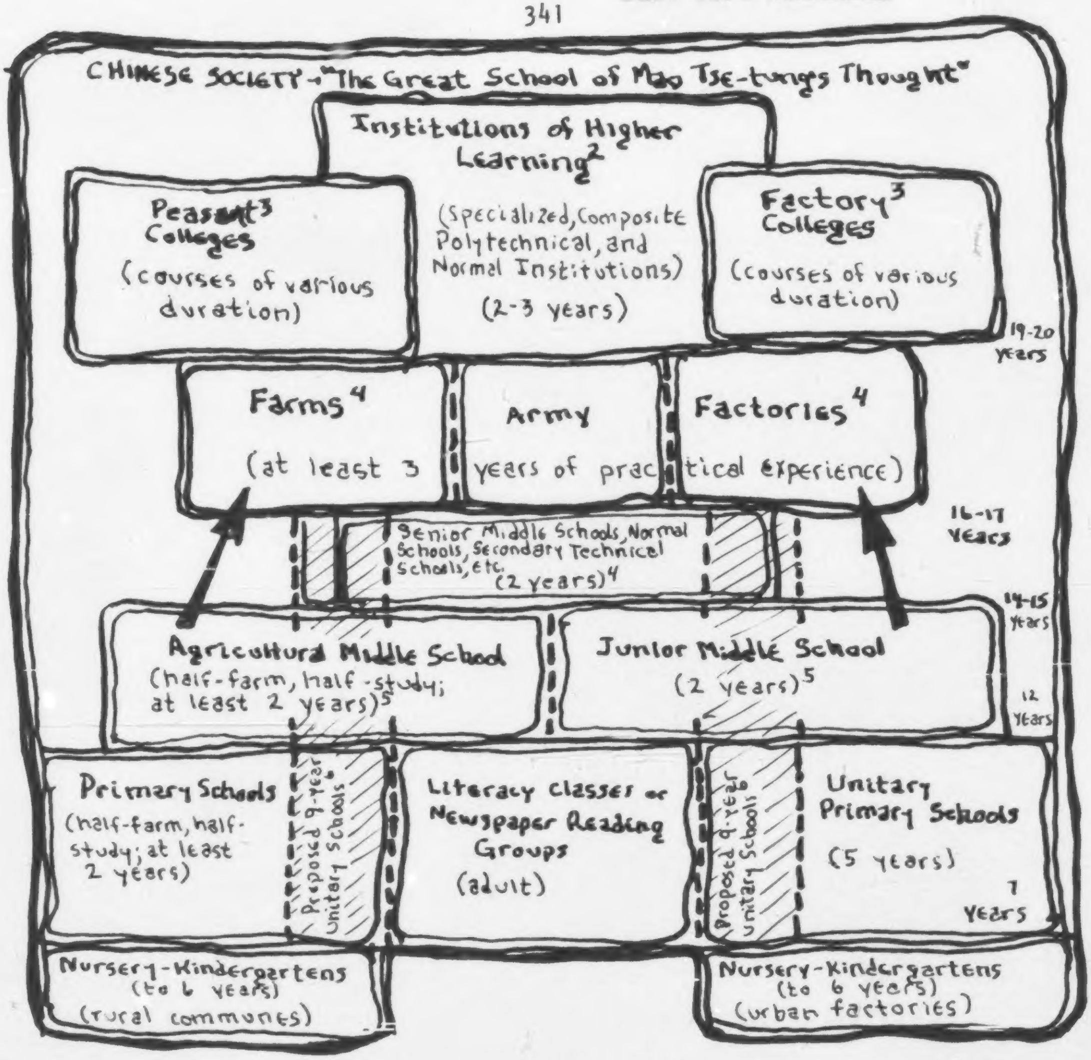

CHINESE SOCIETY → "The Great School of Mao Tse-tung's Thought"
Institutions of Higher Learning2
(Specialized, Composite Polytechnical, and Normal Institutions)
(2-3 years)
Peasant3 Colleges
(courses of various duration)
Factory3 Colleges
(courses of various duration)
19-20 Years
Farms4
Army
Factories4
(at least 3 years of practical experience)
16-17 Years
Senior Middle Schools, Normal Schools, Secondary Technical Schools, etc.
(2 years)4
14-15 Years
Agricultural Middle School
(half-farm, half-study; at least 2 years)5
Junior Middle School
(2 years)5
12 Years
Primary Schools
(half-farm, half-study; at least 2 years)
Proposed 9-year Unitary Schools
Literacy Classes or Newspaper Reading Groups
(adult)
Proposed 9-year unitary Schools
Unitary Primary Schools
(5 years)
7 Years
Nursery-Kindergartens
(to 6 years)
(rural communes)
Nursery-Kindergartens
(to 6 years)
(urban factories)

Figure 2--Education in China: Development for the Seventies[1]

1. The changing nature of the Chinese educational structure renders a rigidly specified "school ladder" inappropriate. Accordingly, this is a composite diagram and provides a tentative schema only. (Stewart E. Fraser in consultation with John N. Hawkins and S. C. Hu.)

2. Supported and administered by the state

3. Supported and administered by communes or factories.

4. Schools run by factories, farms and military or political organs (cadre schools for 1, 2 or 3 years) are not represented.

5. Short-term schools and specialized short courses not represented.

6. A nationwide unitary school of 9 years has been proposed for ages 7-15.

(Source: Fraser E. Stewart and John N. Hawkins, "Chinese Education: Revolution and Development," Phi Delta Kappan, vol. 52, no. 8, April, 1972, p. 491.)

Changes in higher education curriculum have been drastic as well. Previously regarded as elite institutions with no place for manual labor, all schools are now operating on a part-work, part-study basis. While students and professors alike spend up to 50% of their time outside the class in labor or "sharing experiences," the actual form of this activity varies widely depending on the school, its location, the needs of the locale, and often upon the students' particular area of study. For example, at the same Peking University where the Cultural Revolution began, the girls now make furniture while the boys, aided by local factory workers, construct transistors. At the Communications University in Sian, a major wheat center, students grow and thresh wheat. In fact, 44 tons[17] of wheat were produced on campus in 1970. At Sun Yat-sen University in Canton, professors tend vegetable gardens while many classrooms are stocked with local produce such as peanuts and rice.

Integrating learning with practice often means the application of one's expertise to practical problems. For example, Dr. Fu, a biologist from the University of Minnesota, now at Sun Yat-sen University told Terrill that he has had to "abandon esoteric topics that tickle his fancy" and now heads a research project dedicated to the needs of Kwangtung province. In his case, this involves trying to develop new strains of insects to eliminate pests without harming the crops.

The underlying premise behind most of the recent major curriculum changes in China is that learning through experience is both a more effective pedagogical technique and less likely to separate education from reality or students from the masses. As an example, Terrill cites one university history course where the students have centered their attention on a coal mine in the area. One day a week for ten weeks each student and the professor (a Harvard graduate) worked as laborers in the mine. The rest of the time they spent studying the mine's history. In this particular case, the class split up into three groups. One group investigated the history of child labor at the mine (and discovered that at one point children made up 40% of the labor force in the mine), another traced the history of one miner and his family, while the last group looked at the history of strikes at the mine. They then read the draft of their work to the miners. According to the professor, "Meeting history in the flesh this way has proved an excellent pedagogical method."[18]

Probably the most obvious of the curriculum changes in higher education has been the shortening of college programs. Generally speaking, university courses have been reduced from five or six years prior to the Cultural Revolution to two or three today. This has been accomplished by omitting some coursework entirely while combining other portions. At most teacher training colleges, for example, all teaching methods courses have been dropped and a new policy states "teaching methods should be guided from the classroom, not from textbooks."[19] To help achieve this objective, students spend a large part of each day assisting teachers in the college lab or local community schools. At Sun Yat-sen University, mathematics have been combined with dynamics, physics, and electronics. At Peking Normal University ancient history has been cut back and attention placed primarily on the nineteenth and twentieth centuries.

Teaching methods have shifted dramatically as well. Emphasis is no longer placed on lecture, memorization, and exclusively teacher generated activity, but on group discussion and independent study. Material that would have been formerly presented in the form of a lecture is now generally written up by the professor and distributed so the actual class becomes a forum for discussion, actively involving the student as well as the teacher in the learning-teaching process. Exam policies vary but are usually open-book; they emphasize analytic skills, and the questions are often worked out between the students and teacher beforehand. The purposes of exams are as much to test the quality of the teacher as of the student, and as a result they "have lost their terror--at least for students." It appears, too, that the traditional respect shown to teachers and administrators on the basis of status alone is also gone. Albert H. Yee observed that "students were not in competition with each other for grades or for recognition as individuals. Students and teachers work as equals in common to help everyone achieve."[20]

An especially interesting alteration of the university's function is in the area of credentialing. Though practices vary, generally speaking neither diplomas[21] nor grades are given at any level. If a student is experiencing academic difficulty, it is the responsibility of the teacher and the other students to see that he improves.[22] Yee has noted:

> The basic criterion for student effectiveness was successful solution of the problem by the group, with each person being given the opportunity to participate. In the US, the individual learner would no doubt have to go beyond group discussion to indicate his own proficiency on a test. Though individualized testing is not practiced there as here, I have no doubt that teachers and students know fairly well what class members are superior, average, and inferior in any subject. The Chinese system makes for maximum awareness of each other.[23]

In some colleges and universities certificates are issued which contain no class ranking or grade point average; instead, they include the comments and personal evaluations of both the teacher and the graduate's fellow students.[24] With the termination of higher education, the graduate is then assigned to a position--usually in his local region--according to state need, area of preparation, and personal interest in a manner similar to the placing of secondary graduates.

Cultural Revolution experimentation and innovation has also produced at least three new school models: the workers' colleges, reformed medical schools, and perhaps most important, the May 7 cadre schools. Workers' colleges (and peasant colleges, their rural counterpart) are unique in that they are directly attached to the production unit itself and are oriented to meeting that unit's specific needs. The college is located in the actual factory or commune, and in a typical factory college, the students are "selected from among plan workers with at least 12 years experience."[25] Eighty percent of study time is devoted to "profession subjects"--technical training relevant to the specific factory or commune situation. Most of the instructors are technicians actually employed at the factory or commune, but they are also aided by outside professors and technicians who volunteer their time. Medical schools since the Cultural Revolution have undergone radical change and are now designed to produce generalists who are not only physicians, but who, through their public health units, can also train local para-medics who are known as "barefoot doctors." Though training has been cut from five years to three and subject matter by a third, by integrating traditional Chinese medicine with modern techniques, training more para-medics, "combining practical experience with theoretical training" (students begin assisting in operations from their first year), and by phasing out the need for nurses, training all personnel to be general practitioners capable of emptying bed pans as well as diagnosing illnesses,[26] China is developing what one group of American medical observers felt could be one of the finest public health systems in the world.

The May 7 cadre schools, so named for the date Mao called for the turning of China into "one great school," were developed during the Cultural Revolution to reeducate civil servants, "professionals," and cadres through a program of manual labor and self-criticism. A cadre, broadly defined, is a person occupying a leadership role or "leading position" within any organization including the Party, army, state communes, factories, or schools. The stated purpose was ". . . to teach the cadres that they were workers serving the people and not overlords riding rough-shod over them."[27] Originally seen as a temporary part of the Cultural Revolution's general cadre/official reeducation program, they have now become a "permanent reeducation structure to prevent or inhibit revival of a bureaucratic officialdom."[28] Initially the May 7 schools relied primarily on a sort of punitive work system such as the hauling of nightsoil (human excrement used to fertilize fields) in order to humiliate arrogant cadres. Now, however, they are simply rural schools attended by all cadres for one to three years where, by interacting with and depending on the peasants from nearby communes, the cadres learn to respect and accept manual labor while developing personal humility and a good attitude towards

BEST COPY AVAILABLE

the masses. The schools are generally operated on a self-sufficient basis where the cadres try to produce as much food as possible. Due to their lack of work experience or understanding of the local conditions, they invariably must ask for help from the local commune members, "and it is this recognition of their helplessness that is the primary lesson being taught. . . . . The Chinese anticipate that this type of school will become a permanent part of the educational infrastructure. They think it will keep revolutionary ideals and elan alive among those who have cadre status . . . ."[29]

Most of the above discussion on the present state of education in China has centered on changes within the schools. But education is not limited to schools, and in China this is particularly true. In Mao's vision of education, every facet of life becomes a learning experience. Joseph Lee, who recently returned to China after a 27 year absence, illustrates this idea.

> In the old days education was separate from the society, from the community--apart from peasant life or society's activities. There was a special period in life when you'd go to school and study, and then, by the time you finished so much education, you had to be reintegrated into life. This is something the new society will not tolerate, and that is partly the reason for the Cultural Revolution. In the Chinese old society, and even in contemporary America, there was a tendency to regard education in a mechanistic rather than organic way, organic meaning that it is completely integrated. Education is not something specific you do at a specific time in a specific manner. Education is a process that can take place at any time and at any place, in fact, at every moment of your life, wherever you are, whatever you're doing. This is the organic view of education.
>
> Let's look at the peasants for example. In a production team of 20 or 30 persons the entire rice farming process is an educational process. When to plow the field, when to plant the seeds, when to pump the water out of the field--this is all technical education. Members of the team do not do things mechanically. Each person is involved in the thinking process: what are the weather conditions, the soil condition and so on. Why not chemical fertilizer for this particular piece of land? Because of the alkalinity level of the soil; if chemical fertilizer were used it would ruin the crop and the soil. Part of the technical education is in the planning process because the team will sit down and talk about what they're going to do in the coming year, or next month, or next week, or tomorrow.

BEST COPY AVAILABLE

> Besides technical education, the peasants are involved in political education regularly as well. Working in a field, they will take a work break. They sit down and may continue technical discussion, or there is a man in the team who is in charge of reading newspapers and the break may become a forum for discussing politics. In this situation a man is taught how to express himself, how to articulate his ideas, how to handle himself in a new situation.[30]

To facilitate this type of "organic learning," a remarkable degree of economic and social, as well as educationa, decentralization seems to have taken place. The decision on whether or not to utilize a new agricultural development, for example, is not made at the district or national level, but by the work brigade itself. Agricultural technicians are selected by the brigade on the basis of experience. Dr. Lee's brother, for example, was selected to serve his brigade as an agricultural technician; he was given the position because of his "rich experience" in rice farming (even though he had only five years of schooling). He would then attend technical meetings, bring back the innovations and information appropriate to the brigade's needs, make a report, and then, before any implementation, present the proposition to the entire brigade. They must decide whether or not to try it, if so on how much and what sort of land, etc. To make these sorts of decisions which so directly affect the individual's life, the peasant must gain the technical knowledge and the ability to think analytically and exercise good judgment if he is to maximize his brigade's production and thus enhance his personal well being. There is no abstract learning in this situation--it all relates directly and immediately to life on the most concrete and personal basis.

Decentralization of decision-making and policy implementation does not imply a lack of central input. The Chinese cadre system is a highly efficient network of political representatives that penetrates down to the individual peasant. Besides disseminating and extending Party objectives, the cadre, particularly the peasant cadre, serves as a source of feedback and criticism as well. They are thus integral factors in implementing Mao's "mass line" policies, monitoring through small group interaction the attitudes, grievances, and comments of the masses and conveying them, when necessary, to higher level cadres for policy consideration. The cadre thus represents the government to the masses and the masses to the government.[31] The present use of cadres, reflecting the Yenan experience, is less one of propagandizing than it is of explaining and informing. The cadres, it is emphasized, must serve the people and must be able to "lead the mass or accept leadership from the mass."[32] The Chinese Communist government is indeed "a regime that rests on the masses,"[33] but the foundation is being held together by the efforts of the cadres.

The cadres, particularly the lowest level Party representatives being primarily discussed here, often play the extremely critical role of non-formal teachers. In a system dependent on commonality of purpose and cooperative action, the presence of highly credible Party representatives to explain, discuss, and coordinate policies, campaigns, and tactics, is extremely important. These homophilous change agents regularly reach on a face-to-face basis the great majority of the population.

The cadres are especially effective in the area of political education where they combine word-of-mouth channels and centrally generated mass media messages in study sessions or media forums. These forums, as indicated by Lee, usually take place at the production team level within the production unit and generally consist of around 20 members. In 1958, the Great Leap Forward period, 60% of all Chinese adults were engaged in this sort of continuous discussion forum. The study sessions examine a message, article, or news item with the cadre acting as a discussion leader to disseminate, clarify, or reinforce the message being dealt with. Each individual, in a face-to-face seminar situation with a group of his peers and the cadre, participates in the discussion of the items being dealt with and is often asked to give his personal opinions. There is undoubtedly significant pressure towards conformity of interpretation, but there would appear to be now greater latitude (within certain limitations) than during the periods of centralization. The study groups now seem more intent on functioning as socializing agents and message disseminators than "thought control" units, though to an extent this purpose is undoubtedly being served too. Unrest and cadre elitism created by earlier attempts at exclusively "top down" control has established a greater dependence on two way communications. The daily, and often several-times-daily, study groups which involve the great majority of Chinese adults[34] in active discussions on local and national issues with peers and Party representatives is an effective[35] and highly significant part of China's educational mass line.

The mass media play an essential role in the Chinese educational program; the learning effectiveness of the mass media is enhanced through the face-to-face work of the cadres. Though recent figures are scarce, 1959 statistics, reflecting a similar period of media expansion and cultural enthusiasm, indicates that there are 1,811 radio stations and 40 movie studios at the county level or above. There are also 450 newspapers and 859 periodicals published above the county level and hundreds of others below. This means that 15 years ago there were over 3,000 mass media production units engaged primarily in propaganda dissemination.[36] Furthermore, due to word-of-mouth multiplication, largely through study groups, China reaches more people per radio receiver than any other country in the world. For example, though the U.S. reaches 80% of its population through radio and China only 58%, this difference is astonishingly small in light of the fact that the U.S. has nearly 60 times the number of radios per person. Much of this almost incredible exposure is due to the fact that over half of the receivers are linked to public loudspeakers erected in villages and other busy centers. Thus Chinese radio reaches far more ears than would be true of a situation using private receivers. A similar figure is found with newspapers where China reaches three and a half times as many people per newspaper as does the U.S., though at the time these figures were released, literacy in China was considerably less than half that of the U.S. This coverage is due to a number of factors such as the use of newspaper discussion groups, the posting of wall newspapers, and easy access to newspapers in public libraries. Movie production and attendance have exploded as well. Under the Communists it was brought from a virtually non-existent industry until by 1959 the average film attendance by an adult was 10.2, less than one-half that of the U.S. It was estimated in 1959 that the combined print and electronic mass media could reach 86% of China's population with any given message, a truly staggering figure given China's population, immense size, degree of illiteracy, and level of technical development.

While centralization of input is a major factor in China's media system, a great deal of local and traditional media are utilized as well. Chuyi, or story telling, is the vocation of 50,000 professionals and a staggering one million amateurs. These story tellers are usually individuals or small, highly mobile teams who spread their "morality tales" throughout China. Tatzebao, or wall posters, are extremely important (the start of the Cultural Revolution was signalled by an overnight tatzebao campaign on the Peking University campus) and have become so popular that an estimated 33 million were reportedly used on one national propaganda campaign. Drama groups are another somewhat exotic means of communication prominent in China. In each case, however, the discussion of the media's message and its implementation into actual practice provide one of the major dimensions of China's system of mass education.

Taken together, the radical restructuring of the schools, the general decentralization of educational control, increased local-level responsibility for decision-making, and the further utilization of non-formal study groups and mass media forums combine to create an exciting blend of the formal and non-formal education in a unique model of mass social education that may have considerable significance to other LDC's and, indeed, educational planners all over the world.

Learning Effectiveness as a Function of Reward Systems

The effectiveness of Chinese education, both in its more and less formal phases, lies in its accurate and constant perception of the needs of learners. The long range concern is with identifying and meeting the changing needs of the people whom it serves. It has been concluded, through near disastrous experience, that to attempt to assume or to impose a need structure or even a reward structure externally is unsatisfactory, considering the large role education is to play in the new society. The people must be able to see for themselves that the preferred educational program is of genuine and demonstrable benefit to them in satisfying their needs before it will be successful. Unless the rewards resulting from engaging in educational activity are those expected and desired by the people and are perceptibly related to meeting their needs, the learning will not be effective. This is not to say that a government cannot encourage and promulgate new forms or configurations of reward structure or social grouping (as they clearly have done in China). But while initial compliance can be achieved through persuasion, manipulation, and coercion, active support and enthusiastic participation are obtained only when the promises and results correlate.

As an illustration of non-formal education, the Chinese experience is different from what we find in North America or in any of the less developed nations. It is difficult or impossible to classify educational operations in China because of the fuzziness of the line between formal and non-formal education.

As one element of a larger social upheaval, the institutional forms of education have been thoroughly restructured. The historic roles and modes of education in China were abandoned in some particulars and reinstituted in others. The ideals of egalitarian social structure and pragmatic, utilitarian roles for institutions are thoroughly reflected in what education has become in the new China. Education has apparently become highly functional and resolutely accountable to the larger society. Education is expected to "pay off" for the individual in terms of the good of the community. Considering the pragmatic emphasis and the rejection of self-glorification, formal education in the classical molds of the Western world has little or no place in the new China. Education that pays off in delayed gratifications ("someday you will need to know this"), in status-oriented symbols (grades, diplomas, degrees), and in perpetuations of educational opportunity (e.g., the reward of success in high school is eligibility for college) is incompatible with the new socio-political structure. (The skeptic may argue that a basic human desire for prestige and security or individualistic status may ultimately engender a return to personal-advancement formalisms in education, even in China. Time will tell.)

Besides the well documented improvement in physical living conditions within China, the socio-educational system is providing emotional need satisfaction as well. The participants are not regarded exclusively as recipients or subjects but are actually involved in the formulation and implementation of social and educational programs. SEcurity is gained from being (or feeling) involved in the decision-making processes that affect an individual's life. By real participation in the educational operations, the person achieves a sense of greater personal efficacy and worth, countering the resignation, passivity, and fatalism associated traditionally with the Chinese peasantry. He also gains peer group approval and acceptance, thus establishing a more satisfactory personal self-image. Collectively, the new system provides a sense of societal achievement. The resultant sense of "nation-ness" has been carefully orchestrated to give satisfaction to the most humble worker.

As noted, learning which results from voluntary activity is more effective than learning resulting from coerced behavior. In the latter case the individual learns how to secure a reward or avoid punishment; the desired learning which results is a secondary product. The motivating need is not being filled through the learning of the skill or behavior to be learned is actively sought out and internalized as a personal need fulfillment, the learning that results is more resilient, substantial, dynamic (in that it leads to maintenance and extension as needed or as it provides satisfaction), and occurs much more rapidly. Paulo Friere teaches basic literacy to Latin American adults in six weeks. According to one source, the Chinese claim to teach basic literacy in only twenty hours!

The kind of total involvement encountered in China in the learning process outside of the schools (such as workers learning characters pinned to the back of a co-worker, soldiers learning from tracts pasted on the butts of guns, or peasants learning about soil, weather, and crop conditions through intense observation and discussion) is learning which is not motivated by coercion or artificial inducements. Instead it appears to be engaged in because it genuinely meets the physical and emotional needs of the learners.

To assume that the Chinese have discovered the ultimate of Pavlovian-Skinnerian techniques would be a serious error. Far from even a stimulus-response system, an elaborate and even huge dynamic feedback approach to social learning is used.

Stimulus-response learning often affects only surface behavior, and the behavioral change is usually narrow and superficial. The individual reacts only to a specific stimulus and derives reward or punishment from his response to that stimulus. There are several potentially negative results: it maintains dependency on the source and limits the learner's view of the learning process; it permits only a "scatter-gun" approach to learning since each specific stimulus must be isolated, tested, and implemented from the top down rather than growing from the needs of the participants, and it denies the wider possibilities of dynamic learning by ignoring the complexity and interrelatedness of needs and the learning process involved in meeting them.

In China the kinds of resources the central operatives provide are based primarily on data from the universities and research centers. The innovation and motivation in implementation come from the people themselves who either seek out pertinent data or select individuals whose job it is to stay abreast of developments that might prove beneficial to the work brigade or to the entire commune. The concerns of the masses are transmitted through the same process to the bodies most likely to effectively deal with them. Sun Yat-sen University, for example, devotes the bulk of its research to improving rice production. The channels are clearly established and the initiative and feedback necessary for continual information generation come from below.

Consistent with the above, change agents in China usually come from the target population or are, at least, readily acceptable to them. This insures maximum program effectiveness. The agent must be subject to some form of selection process since his authority stems from the people's view of his knowledge, competency, and expertise, which establishes his source credibility. Many change agents in the People's Republic of China are from the peasantry, and they are, at the practical (versus the political) level, selected by the work brigade members and can be removed by them. The cadre's continued personal success is dependent upon his continued demonstration of competency in his particular area. The Chinese recognize that the exercise of arbitrary power precludes the possibility of the development of self-direction and confidence necessary for further active acceptance of innovation. Therefore, their change agents, at least at the practical and educational levels, cannot derive their credibility or authority from status but must depend instead upon their proven ability to help meet the needs of the people who accept their authority.

Extolling the virtues of education in the People's Republic of China is not our purpose. We do not even intend to suggest that a complete merger or a dissolution of the lines separating the formal and non-formal educational enterprises is necessarily desirable. In fact, the political price for such merger seems quite high; at the base it suggests a complete nationalization (or, at least, politicalization) of all aspects and functions of education. Some regimes may be unwilling to accept such a heavy responsibility; others may be too willing, only to find the people unwilling. In the Chinese case, the solution for this dilemma would seem to have been found, for now at least, in the complete identification of the masses with the politicalization process.

What we do intend is to call attention to the Chinese experience as an example of profound restructuring of education to bring it into close relationship to the stated goals of the society. Learning effectiveness is then definable in terms of the social goals of a body politic far larger than those that exist within a single social institution.

The major observations and generalizations that are drawn from the Chinese experience follow:

1. The distinction between formal and non-formal education is virtually meaningless in this highly functional concept of education.
2. A wide range of educational modes are employed to effect a total system.
3. Less emphasis is placed on graded, sequenced, general schooling than on specific task-skill oriented training.
4. Educational opportunity is itself a reward for service to the society, rather than a basic right.
5. The rewards for effective learning exist less in the school or the educational program than in the larger experience of life in which the learning is applied.

This fifth point, that the rewards for effective learning exist in life experiences rather than in the arbitrary institutional reward systems typical of schools and schooling, may represent the key to the vigor and durability of the educational reforms in China. Educational accomplishment insofar as those accomplishments are valid and real must be rewarded in some way. Only in the most idealistic sense is learning its own reward. A reinforcing "pay-off" must somehow be provided. Reinforcement theories of learning all share a tenet regarding the need for reinforcement if behavior is to be predictably repeated. Even those who reject reinforcement theories find some place in their own theories for rewards for satisfactory performance of learning tasks. Most of the practical socializations (learning of life skills) are rewarded by the satisfactions of functional communication, effective interpersonal transactions, and the satisfaction of human appetites. Thus, what one learns in early childhood and pre-adult years through the informal modes leads to functional satisfactions. Not so with what schools are typically concerned; since the reward structures of the student's larger society do not naturally and functionally reward the learnings that the school sponsors, endorses, and induces, an artificial reward structure must be created by the school so as to increase the probability of learning. Hence, grades, promotions, certificates, degrees, commendations, praise, and exemptions from punishments become the substitutes for real rewards that are lacking. Yee observes:

> Explaining educational opportunity and purpose to a child seems easier in China than in the U.S. not just because alternatives for one's attentions are lacking there. With so much stress on applications and service, the Chinese do not postpone gratification in educational achievement. The child asks why he cannot go, not why he must go to school! Chinese education is continuous with and not just preparatory to actual participation in the community. Yet the difference in schools may be more adequately attributed to the different roles and attitudes expected of the young. Also, the greater structuring of social systems in affluent nations of the West assigns and separates people by relevant indices, e.g., age, sex, training, means, etc. In terms of handling basic human activities simply, cooperatively, and independent of unseen others, the Chinese better resemble pioneer than modern Americans.[37]

Non-formal education, to the extent that it is focused on practical, applicable learnings that have immediate social and economic rewards, is less likely than formal education to resort to the creation of an artificial or substitutionary reward structure. Much non-formal education is valued by learners because of their explicit desires for the life-changing effects of the learning. It is true, however, that in a society dominated by a formal educational establishment, non-formal educational programs may sometimes be designed with their own systems of artificial rewards slavishly mimicking the formal schools. Given a society wherein people expect certificates, grades, and the life, this may be necessary, no matter how absurd it may seem. Such is the colonial legacy!

THE REWARD SYSTEM OF SCHOOLING	THE REWARD SYSTEM OF INTRINSIC LEARNING
Symbolic	*Functional*
Delayed	*Immediate*
Linked to Testable Behavior	*Linked to Demonstrable Behavior*
Individualistic Values (Self has meaning in terms of Personal Goals)	*Group Values (Self has meaning in terms of contribution to Group Goals)*

(This chart is to some extent an exaggeration for the purpose of ilustration. The differences indicated are usually apparent--easy enough to see, though rarely in extreme or mutually exclusive forms.)

Figure 3.--Contrast of Reward Systems: Schooling and Intrinsic Learning.

The Chinese situation is virtually unique at this very point: artificial reward systems for learning--formal or non-formal--are less necessary (perhaps unnecessary altogether, if we are to believe the reports) for the very reason that the society does not create an expectation of extrinsic rewards. Thus, educational experiences are expected to "pay off," not in symbols and status but in uses and satisfactions from those uses. With reference to education, the social revolution in China has had the effect of uncoupling schools from the symbolic reward structures characteristic of formal education. Now schools and non-school programs of learning are linked to the reward system of the larger society. Becoming learned--effectively learned--is rewarded by the use of one's learning to better his community, his nation, and, in turn, himself.

Implicit in these observations is the recognition that the effectiveness of the Chinese educational system is clearly related to and dependent on its ability to accurately and constantly identify the emotional and physical needs of the educational participants and to effectively meet those needs through its educational programs. In fact, the success of the entire Chinese social revolution appears largely dependent on the Chinese people perceiving their needs being met through their involvement and support. And to insure continuous, energetic participation, these perceived needs must in fact be met. Promise and reward must correlate, and in China, for the time being anyway, this critical correlation seems very close.

Conclusions

Some of the attempts to copy or "adapt" the Maoist principles for applications in Latin America and East Africa have failed to recognize the crucial function of the Chinese reward system. There may be some lessons to learn from the techniques of instruction and the modes of educational delivery used in China today, though they seem to be neither particularly modern nor remarkably sophisticated by technological standards. There may be other lessons to learn from the blurring of the sharp distinctions between the formal and non-formal modes of education--and these lessons would prove inspiring for those who need to recognize the validity of an integration between community living and life-long learning. But the most profound lessons to learn from the Chinese experience is in reference to the need for alignment of the value system and reward structure of the educational programs of the nation with the goals, value system, and reward structures of the nation as a whole--and to harmonize these two in an honest recognition of the validity of human life, liberty, and the pursuit of individual and corporate happiness.

> When you talk of developing non-formal education programs which can be plucked out and plugged into the needs of various developing countries, it sounds typical of our Western approach. It's a bit mechanistic. You are in a sense disregarding the concrete conditions of that particular society, its aspirations and needs, its historical factors, etc. In China certain things worked in the Chinese system which may be exported to other countries, and perhaps a modified version of it will work. But some things that work there may not work elsewhere because the chemistry is different.[37]

ULTIMATE TARGET POPULATION:

The entire Chinese nation. Built into Mao's concept of education is confidence in the unlimited capacity of the unfettered masses to transform the society and material conditions of China.

SELECTION OF TARGET POPULATION FOR PARTICULAR EDUCATIONAL EXPERIENCES:

Individuals best suited to transmit educational gains for the benefit of others. On the basis of his political party dedication to the masses, an individual is educated so long as he puts the nation before himself. To a great extent selection is made by the masses, by the candidate's peers. Individual motivation and elitism is selected out and education ceases to be an "entrance way to power and wealth."

GOAL:

A new society based on equality, socialism, cooperation, and self-reliance. Implicit in this goal is the need for an "educated non-elite." Education is the primary instrument for the "spiritual" transformation of man and society--the bringing forth of a new kind of selfless person, committed to the Maoist goal "serve the people." At the same time educational institutions are needed to train competent and skilled workers for every sector of production. The two goals combine in the idea of the all-round man, the "cultured worker"--a concept that seeks to eliminate the rank and privilege differentials between the "mental aristocrats" and manual workers.

REWARD SYSTEM:

Increased individual well-being, material and emotional, through collective nation-building. Each individual becomes an integral part of his immediate group which in turn directly interlocks with larger groups until these see themselves as the entire nation. Individual well-being is inextricably bound up in the overall development of the nation ("the people"). The individual can prosper only in terms of the larger group. The greater his personal contribution, the greater his self-esteem and sense of having fulfilled his obligation to his country and countrymen.

Figure 4.--Societal Achievement Model of Chinese Education.

The question of whether and to what extent the Chinese educational model is generalizable to other Less Developed Countries is one that is probably largely unanswerable. It is true that the Chinese system grew up in response to specific demands and conditions within China. Presumably to the extent that these factors are similar in other situations, it would appear that elements of China's solutions might be applicable. On the other hand, it would appear equally clear that China's experiences cannot be duplicated, and to that extent the Chinese solutions must be modified to fit the objectives and problems of another locale. Mao has stated that revolution is not exportable, and this includes the educational revolution as well.

Some observers have noted that China's educational experiment is still, and may always be, too fluid to regard as a pattern or "model." To the degree that they are speaking of an educational package, a kind of teacher-student proof national education kit that can be shipped intact and effectively implemented in another social and cultural milieu, they are hardly to be disputed. This has been precisely the mistake made by Western educators for the past century in trying to export their model to countries whose conditions and needs were vastly different. The rationalization for the seemingly irrational belief in the appropriateness of one educational philosophy and educational structure for the entire world appears to lie in the ethnocentric conviction that only a complete and utter socioeconomic transformation to the Western model constitutes genuine development. A country's "progress" can thus be determined by the extent of its emulation of the Western industrial, capitalist, individualist model. In education the pathetic results--elitist leaders proficient in ludicrously irrelevant areas with little understanding of or compassion for the conditions of the masses, and compulsory education with no national purpose and of little practical value--have tragically throttled and constrained nations embarking on the developmental process.

But many less developed countries are becoming aware of the inappropriateness of an alien system in meeting national needs. The presence of vast numbers of educated unemployables in a poverty stricken nation who are unwilling to dirty their hands and the realization that up to three-fourths of a country's youth will be out of school by 1980[38] has forced educational planners to re-evaluate their educational policies and to examine new alternatives.

To treat the Chinese education model prescriptively then would be to repeat the mistake made by the purveyors of Western formal schooling who presented it as a panacea. But to the extent that China's system reflects new approaches to common problems, it is a significant innovation in national educational planning with broad international implications that cannot be ignored. To understand the fundamental components of the Chinese model as they now apply to the needs and problems of other developing countries, it should be useful to glance at another country's situation, the faults and shortcomings of its present educational system, and some solutions suggested by the China model.

It may be pointed out that Tanzania, as the biggest recipient of Chinese aid, is not an entirely reliable example to examine. Inasmuch as the educational problems President Nyerere outlines are nearly universal among less developed countries and since the close cooperation between China and Tanzania suggests a certain commonality of social objectives, it would seem that, for our purposes, Tanzania is quite acceptable. In a recent article, "Education for Self-Reliance," Joseph Nyerere, President of Tanzania, identifies four main difficulties with his country's educational system.

> 1. "The education we are providing is basically an elitist education designed to meet the interests and needs of a very small proportion of those who enter the school system. Although only about 13% of our primary school children will get a place in a secondary school, the basis of our primary school education is the preparation of pupils for secondary schools. Thus 87% of the children who finished primary school last year do so with a sense of failure . . . . The other 13% have a feeling of having

> deserved a prize--and the prize they and their parents expect is high wages, comfortable employment in towns, and personal status in the society."

2. "Tanzania's education is such as to divorce its participants from the society it is supposed to be preparing them for . . . . The school is a place children go to at age seven and which they and their parents hope will make it unnecessary for them to become farmers and continue living in villages."

3. ". . . our present system encourages school pupils in the idea that all knowledge which is worthwhile is acquired from books or from 'educated people'--meaning those who have been through a formal education . . . . Government and party tend to judge people according to whether they . . . 'have a degree' . . . . If a man has these qualifications, we assume he can fill a post . . . . If a man does not have these qualifications, we assume he cannot do a job; we ignore his knowledge and experience."

4. ". . . our poor nation is taking out of productive work some of its healthiest and strongest young men and women . . . . How many students spend their vacations doing a job which could improve peoples' lives . . . ?"[39]

To paraphrase, Nyerere is saying that Tanzanian education is elitist in that it cultivates feelings of individual superiority, is largely irrelevant to the concrete needs of the country, credentials, values, and rewards only formal learning, and withdraws a significant portion of the labor force from productive work. Each one of these concerns has been articulated and repeatedly confronted in China. Together they present some of the prime targets of the Cultural Revolution's educational reform; the question of elitist education formed the basis for the entire Red vs. expert struggle. Furthermore, virtually identical lists of problems could well be drawn up by practically every less developed country. The problems China has found in its struggle to create a viable, nation-serving system of education are not restricted to a single country; to varying degrees and in various forms, they are the same educational issues plaguing nations, developed and undeveloped, all over the world.

> The Chinese people have made great strides towards creating a new, indigenous, collectivized educational system to meet China's needs. They are determined to avoid developing an overeducated elite with no function to perform in society, such as that which Western-style education has created in many developing nations. Although the Chinese describe their far-reaching educational experiment as turning "the whole country into a great school of Mao Tse-tung thought," the problems they are grappling with are universal.[40]

Those who claim that China's experiment is too fluid to be regarded as a model are, as mentioned, partially correct. Grappling with common problems and arriving at absolute, common solutions are not necessarily related. Thus far the grappling in China has taken the form of radical experimentation and perhaps it is this process of examination, trial, and evaluation that is China's real contribution to world education rather than her tentative conclusions. Models as prescriptions have not proven very effective when shipped intact from point of origination to new situations. To the extent that a model has developed historically out of concrete experience and local social conditions and needs, they continue to fill those functions even though the purposes may be totally inappropriate to their new situation. In China, specific local needs and national objectives produced a situation that clearly demanded entirely new conceptions of education; given the political philosophy and social aspirations of the Communists, no existing model was adequate for their needs. The procedure for discovering and developing this "new, indigenous, collectivized educational system to meet China's needs" meant revolutionizing their educational structure and perhaps even more importantly, revolutionizing their educational perspective.

Many countries, if not all, castigate almost constantly the shortcomings of their educational system. There is little risk involved in criticism and little possibility of change. Even when change does occur, it rarely goes beyond moderate reform. The reasons for this are numerous, probably the most obvious being that many of the educational critics and most of those in a position to actually implement change are successful products of the existing system and are going to be reluctant to threaten their own elite status by radically restructuring that system. But another factor that deserves some attention is the simple limitation imposed upon educational planners by their own experience and the lack of exposure to alternative educational modes. For years many less developed countries have been aware of the failure of formal education in their countries and have not hesitated to bitterly attack its operation. Yet little has been accomplished since the usual "solution" has been a variation on the idea that the answer to all problems is "more of same." Failings were not due to fundamental systemic defects, but to a lack of quantity (number of schools) or quality (number of books, qualified teachers, etc., etc.). This way of viewing problems has been dubbed "old think"--the answers to new problems are more of the old "solutions."

The point is that as long as a country is mired in "old think" and cannot accept genuinely revolutionary perspectives, its ability to substantially turn its educational system around is severely limited. As a case in point, one of the most innovative aspects of China's educational experiment has been a virtual elimination of the division between formal and non-formal educational sectors. They simply rejected the distinctions and through practice allowed a system to develop that integrated the two. They were able to escape the restrictions of what might well be a false distinction, and in China's case at least was certainly an irrelevant one. The procedure for creating an indigenous mass educational system is thus exportable to other situations only if their leaders are capable of erasing the dichotomy in their own minds between formal and non-formal education. This requires a radically new perspective of education that is not bound by previous expectations, old formulas, or colonial models, but is instead dependent on the relatively organic, unstructured growth of a system which springs from the needs, conditions, and expectations of the people themselves.

Specifically, nations looking to China's experiment for direction must be willing to loosen central control of policy generation and implementation. The China experience suggests that only the most general kinds of objectives and policies can be determined centrally, and that even those had better have some direct benefit for the people if a system of mass education and balanced development is to be genuinely effective. This means drastic decentralization of school operation, curriculum planning, and educational control. Only in this way can the people become truly involved in the educational process on a mass level and mold it to meet their concrete needs and reflect their local conditions. But before a nation can do this, it must be able to see education not as a period of lock-step labor in the schools or a function of rural extension teams, but as a process that occurs at every level of society and in "every facet of life." It is a process that doesn't ossify into a "model," but it changes, creates, and modifies as the country's needs and conditions fluctuate. This is the essence of China's educational experiment, and it is this broad revolution in educational thinking, not another pre-packaged set of educational recipes, that is China's contribution to world educational planning.

FOOTNOTES: CHAPTER VII

[1] Paul Hiniker, "Mass Media and Study Groups in Communist China," in *Mass Communication and the Development of Nations*, pp. vi-14.

[2] Marilyn Tinsman, "Chinese Educational Development in the 20th Century," in *Problems of Educational Development and Modernization in Asia*, p. 106.

[3] Wing-tsit Chan, *A Sourcebook in Chinese Philosophy*. See also Mencius' "bare hill" analogy.

[4] Peter J. Seybolt, "The Yenan Revolution in Mass Education," *The China Quarterly*, Vol. 48 (October-December, 1971), 641-642. See also Mao Tse-tung, "On Practice."

[5] *Ibid*, p. 650.

[6] *Ibid*, p. 664.

[7] Franz Schurmann, *Ideology and Organization in Communist China*, p. 582.

[8] Victor Nee and John N. Layman, "The Cultural Revolution at Peking University," *Monthly Review*, Vol. 21 (July-August, 1969). Unless otherwise noted, figures relating to the class makeup of student bodies are drawn from this source.

[9] John Israel, "Politics and Education in China: The Chinese Student Movement," in *Problems of Educational Development and Modernization in Asia*, p. 7.

[10] Seybolt, *op. cit.*, pp. 668-669.

[11] Joseph Lee, unpublished interview.

[12] Ross Terrill, *The 800,000,000. The Real China*. This is the highest figure encountered. Fraser puts the literacy rate among adults at 45% while Yee estimates the figure to be around 60%.

[13] Rhea Menzel Whitehead, "How the Young are Taught in Mao's China," *Saturday Review*, March 4, 1972, p. 11.

[14] Terrill, *op. cit.*, p. 9.

[15] Stewart E. Fraser and John N. Hawkins, "Chinese Education: Revolution and Development," *Phi Delta Kappan*, Vol. 52 (April, 1970), 495.

[16] Whitehead, *op. cit.*, p. 44.

[17] Terrill, *op. cit.*

[18] *Ibid.*

[19] Fraser, *op. cit.*, p. 496.

[20] Terrill, *op. cit.*

[21] Fraser, *op. cit.*

[22] Terrill, *op. cit.*

[23] Fraser, *op. cit.* See p. 498.

[24] *Ibid.*

[25] Peter Shursberg, "The May 7 Schools," *Newsweek*, Vol. 99 (June 14, 1971), 50.

[26] Fraser, *op. cit.*, p. 499.

[27] *Ibid.*

[28] Lee, *op. cit.*

[29] See Lewis, Gourlay and Hiniker.

[30] John Wilson Lewis, *Leadership in Communist Society*, p. 187.

[31] Walter Gourlay, *The Chinese Communist Cadre, Key to Political Control*, p. 5.

[32] Hiniker, *op. cit.* According to Hiniker, "Communist China utilizes formal face-to-face discussion groups to supplement the consumption of her mass media to a greater extent than any other nation in the world," pp. vi-5.

[33] *Ibid.*, pp. vi-1.

[34] *Ibid.*, pp. vi-3.

[35] Lee, *op. cit.*

[36] UNESCO, "A Statistical Analysis of Out-of-School Youth in Asia," unpublished report, 1973.

[37] Julius Nyerere, "Education for Self-Reliance," *Africa Report,* Vol. 12 (June, 1967), 38.

[38] Whitehead, *op. cit.*, p. 12.

BIBLIOGRAPHY

BEST COPY AVAILABLE

Barnett, Doak. *Cadres, Bureaucracy and Political Power in Communist China*. New York: Columbia University Press, 1967.

Bastid, Marianne. "Economic Necessity and Political Ideals in Educational Reforms During the Cultural Revolution." *The China Quarterly*, Vol. 12, (April-June, 1970),

Chan, Wing-tsit. *A Sourcebook in Chinese Philosophy*. Princeton, N.J.: Princeton University Press, 1963.

Ch'en, Jerome. *Mao and the Chinese Revolution*. New York: Oxford University Press, 1965.

Fraser, Stewart. *Chinese Communist Education: Records of the First Decade*. Nashville: Vanderbilt University Press, 1965.

Fraser, Stewart E., and Hawkins, John N. "Chinese Education: Revolution and Development," *Phi Delta Kappan*, Vol. 52, No. 8 (April, 1972), 487-500.

Galt, H. S. *History of Chinese Educational Institutions*, Vol. 1. London: Stephen Austin and Sons, 1951.

Geddes, W. R. *Peasant Life in Communist China*. Ithaca, N.Y.: Society for Applied Anthropology, 1963.

Gourlay, Walter. *The Chinese Communist Cadre, Key to Political Control* Unpublished, 1952.

Hiniker, Paul J. "Mass Media and Study Groups in Communist China," in *Mass Communication and the Development of Nations*, ed. by David K. Berlo. East Lansing, Mich.: International Communications Institute, 1968.

_______. Unpublished notes on the Chinese Communist social and political system, 1969.

Israel, John. "Politics and Education in China: The Chinese Student Movement," in *Problems of Educational Development and Modernization in Asia*, ed. by Peter Hackett. Charlottsville: University of Virginia Press, 1972.

BEST COPY AVAILABLE

King, V. S. *Propaganda Campaigns in Communist China.* Cambridge, Mass.: MIT Press, 1966.

Lee, Joseph. Unpublished interview, January 25, 1973.

Lerner, Daniel. *The Passing of Traditional Society.* New York: Free Press of Glencoe, 1958.

Lewis, John Wilson. *Leadership in Communist Society.* Ithaca, N.Y.: Cornell University Press, 1963.

Liu, Allan P. L. *The Film Industry in Communist China.* Cambridge, Mass.: MIT Press, 1966.

_______. *The Press and Journalism in Communist China.* Cambridge, Mass.: MIT Press, 1964.

_______. *Radio Broadcasting in Communist China.* Cambridge, Mass.: MIT Press, 1964.

_______. *The Use of Traditional Media for Modernization in Communist China.* Cambridge, Mass.: MIT Press, 1965.

Nyerere, Julius. "Education for Self-Reliance." *Africa Report.* New York: The African-American Institute, Inc., Vol. 12, No. 6 (June, 1967), 72-79.

Nee, Victor and Layman, Don. "The Cultural Revolution at Peking University," *Monthly Review,* Vol. 21 (July-August, 1969), 1-91.

Price, R. T. *Education in Communist China.* London: World Education Series, 1970.

Seybolt, Peter J. "The Yenan Revolution in Mass Education," *The China Quarterly,* Vol. 48 (October-December, 1971), 641-669.

Schurman, Franz. *Ideology and Organization in Communist China.* Berkeley: University of California Press, 1968.

Schram, Stuart. *The Political Thought of Mao Tse-tung.* New York: Frederick A. Praeger, 1967.

Sen. Lalit K. "The Concepts of Tradition and Modernity: a Re-Evaluation." Unpublished paper prepared for the Second World Congress of Rural Sociology, 1968.

Shursberg, Peter. "The May 7 Schools," *Newsweek,* Vol. 99 (June 14, 1971), pp. 50-53.

BEST COPY AVAILABLE

Teng and Lew. *Education in China.* Peking: Society for the Study of International Education, 1923.

Terrill, Ross. *The 800,000,000. The Real China.* New York: Dell, 1972.

Tinsman, Marilyn. "Chinese Educational Development in the 20th Century," in *Problems of Educational Development and Modernization in Asia,* ed. by Peter Hackett. Charlottsville: University of Virginia, 1972.

Whitehead, Rhea Menzel. "How the Young are Taught in Mao's China." *Saturday Review,* March 4, 1972, pp. 40-45.

Yang, C. K. *Chinese Communist Society: the Family and the Village.* Berkeley: University of California Press, 1968.

Yee, Albert H. "Schools and Progress in the People's Republic of China." *Education Research,* Vol. 2, No. 7 (July, 1973), 5-15.

Yu, F. T. C. *Mass Persuasion in Communist China.* New York: Praeger, 1964.

______. "Some Notes on Communication and Development Policy in Communist China." Unpublished, 1964.